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ABSTRACT

This handbook presents reading materials for a distance education course designed to enhance an understanding of the nature of workplace literacy needs and to show how to develop and teach in workplace literacy and basic skills programs. The three reading materials presented in the handbook are: (1) "Developing and Evaluating Workplace Literacy Programs: A Handbook for Practitioners and Trainers" (Larry Mikulecky and others); (2) "How to Gather and Develop Job-Specific Literacy Materials for Basic Skills Instruction" (Rad A. Drew and Larry Mikulecky); and (3) "What Works? Literacy Training in the Workplace." The third set of materials is a participant packet from a videoconference sponsored by the National Center on Adult Literacy (Philadelphia, PA, April 13, 1995). The packet contains an annotated bibliography with 51 print references, 9 selected organizatonal resources and electronic on-line resources. (RS)

Education L530:
Developing Workplace Literacy Programs
Course Handbook II

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Sections:

I. Developing and Evaluating Workplace Literacy Programs: A Handbook for Practioners and Trainers

II. How to Gather and Develop Job-specific Literacy Materials for Basic Skills Instruction

III. What Works? Literacy Training in the Workplace

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NCAL

Developing and Evaluating Workplace Literacy Programs: A Handbook for Practitioners and Trainers

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Practice Guide

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DEVELOPING AND EVALUATING WORKPLACE LITERACY PROGRAMS:

A HANDBOOK FOR PRACTITIONERS AND TRAINERS

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ABSTRACT

This handbook is a general guide for starting a workplace literacy program. It outlines methods for establishing a program, from the early stages of planning through implementation to program evaluation. It discusses some of the literacy demands that workers face and how workplace education programs can address them. The key elements of planning a workplace literacy program include establishing a planning group, analyzing the need for education, locating funding sources, and gaining the support of management and employees. Developing a program involves conducting a literacy task analysis and designing relevant curriculum using materials from learners' jobs. It also involves recruiting learners to a program. Program evaluation is discussed from two perspectives. Formative evaluation examines the program while it is still under way so that changes can be made. Summative evaluation determines how effectively goals were met and looks at the impact of the program on learners and job productivity.

INTRODUCTION

This handbook is intended to serve as a general guide for starting a workplace literacy program. It outlines methods for establishing a program, from the early stages of planning through implementation to program evaluation. The definition of literacy used in this guide is a broad one, encompassing the basic skills of reading, writing, and mathematics as they relate to the use of print materials such as manuals, forms, and graphs. Excluded from the definition is the more technical workplace training involved, for example, in learning how to operate new machinery. However, such technical training may require preliminary literacy education for some workers, who may have difficulty reading the training materials or related technical manuals. Thus the scope of what a workplace literacy educator may do is somewhat vague, but its core lies in the area of basic skills.

Chapter One discusses some of the literacy demands that workers face and how workplace education programs can address them. Trends influencing programs include increased use of literacy in the workplace, the growing service sector including more temporary and part-time jobs, and an increase in the number of non-English speaking workers. Effective programs address individual learner needs through long-term education and the use of custom-designed instruction.

Chapter Two describes key elements of planning a workplace literacy program, including establishing a planning group, analyzing the need for education, locating funding sources, and gaining the support of management and employees. It is important to address the needs of the various groups within a workplace in order to encourage the development of a shared vision.

Chapter Three explains how to conduct a literacy task analysis and how to design relevant curriculum using materials from learners' jobs. This custom-designed curriculum may be supplemented with suitable off-the-shelf materials and the development of job aids. This chapter also describes methods for recruiting learners to a program.

Chapter Four discusses evaluating the program from two perspectives. Formative evaluation examines the program while it is still under way so that changes can be made. Summative evaluation uses learner assessments and other measures to determine how effectively goals were met and to look at the impact the program may have had on job productivity.

This guide includes several important features to assist you as you plan your workplace literacy program. For quick reference, summary boxes appear below each major heading in the text. These will provide a brief overview of the key points to remember. In addition, an appendix contains a set of overheads that provide a broad outline of each chapter. These are intended to serve as teaching aids so that the guide can be presented as a series of workshops for staff development. Besides providing a complete reference list, the bibliography also indicates sources for further reading on topics covered in each chapter, such as references that describe in detail how to perform a literacy task analysis or conduct formative interviews.

It is recommended that you read the entire guidebook before developing a program or offering any courses. This is because some of the steps necessary to establish a new program will overlap with others. For example, even though some parts of the evaluation are performed after learners have completed a course, effective evaluation requires developing assessments that are administered to learners before they begin taking courses. The guidelines discussed here will assist you in all stages of program development, from establishing a planning group to evaluating the program's impact.

CHAPTER ONE

CURRENT PRACTICES IN WORKPLACE LITERACY PROGRAMS

Over the past two decades, research has identified the challenges that workplace literacy programs face. For example, we have learned that

- there are several different workplace literacy problems calling for different solutions,
- improvement takes a significant amount of learner practice time,
- transfer of learning to new applications is severely limited, and
- significant learning loss occurs within a few weeks if skills are not practiced.

Recent trends in the labor market and in the population of workers seeking employment have also begun to influence workplace education. These trends include

- a shift in employment opportunities from relatively low-skilled jobs in manufacturing to higher skilled jobs in the service sector;
- a restructuring toward more efficient, "high-performance" workplaces which require higher skill levels of their workers;
- a general increase in the use of literacy in workplaces;
- an increase in temporary and part-time work;
- a shortfall in the level of skills workers bring to employment; and
- an increase in the number of workers with limited abilities to use English.

Workplace literacy programs operating within these constraints are characterized by

- instruction that addresses individual learners' needs and is long term;
- active involvement by major stakeholders (e.g., management, employee organizations, instructors, and the learners themselves); and

- a custom-designed curriculum that integrates basic skills instruction with workplace applications and materials.

Although effective programs incorporate these elements, few have the necessary resources to incorporate them all at the outset. Most likely, you will have to begin with one class, such as a GED (General Educational Development) program or perhaps a short job-related course that teaches some basic skills, and then expand gradually to include more customized instruction. Thus, an effective literacy program that meets the needs of all workers can be achieved gradually, over a longer period of time.

DEMANDS AND CONSTRAINTS

- Multiple program strands should address multiple problems.
- Improvement takes significant learner practice time.
- Transfer to new applications is severely limited.
- Significant learning loss occurs without regular practice.

Multiple Program Strands Should Address Multiple Problems

Because worker skills and needs vary widely, an effective workplace program should offer several sorts of instruction. These may include tutoring for very low-level literates, GED courses for those without high school diplomas, targeted skills for brush-up courses preceding technical training, and workplace-based English as a Second Language classes in workplaces with many ESL speakers.

A program with several different sorts of instruction is much more likely to succeed. Learners who experience success in one class are more likely to take additional classes. This is extremely important because most single workplace classes are too brief to have much impact. To make major skills gains, workers must continue learning and practicing for hundreds of hours as they move from class to class and strand to strand.

EXAMPLE: In one manufacturing plant, a multi-strand program was started with a skills enhancement strand where learners enrolled on a voluntary basis and received general instruction in areas where they believed they needed the most review. As the program continued, additional strands were added to address specific skills related to jobs that were performed most frequently around the plant. Later, a math skills strand was developed that supported the plant's new quality control program, contributing to overall productivity.

As you become more familiar with your organization's concerns, it is possible to incorporate new strands gradually to meet learners' demands.

Improvement Takes Significant Learner Practice Time

Training material and technical reading material in the workplace tend to range from upper high school to beginning college difficulty levels (Mikulecky, 1982; Rush, Moe & Storlie, 1986; Sticht, 1975). Though some learners with high school diplomas may only need a short brush-up course (i.e., 30–50 hours) to learn to comprehend such materials, other learners may take as much as several hundred hours of instruction.

A child in school takes 180 full days of practice, on average, to improve a grade level in reading and mathematical abilities. Adults are more efficient than this, but it still takes an average of 100–120 hours of practice and instruction for adults in adult basic education classes to make a grade level improvement. Although some individuals may improve more rapidly, the best award-winning programs still take 50–60 hours to help learners improve a grade level in general literacy skills (Mikulecky, 1989). This means that a worker who has difficulty reading simple sentences will take hundreds of hours of practice and instruction before he or she can easily read workplace memos, manuals, and safety instructions.

Since workplaces cannot afford to offer the thousands of hours of instruction provided by public schools, it is important to provide workplace instruction which multiplies practice outside of classes. This means linking instruction to materials and opportunities for practice that exist in the work and home lives of learners. Much like a diet, exercise, or health program, an effective workplace literacy program must help adults change their lifestyles to include more literacy practice.

EXAMPLE: In an insurance company, a technical manual became the basis for instruction in how to scan the table of contents to find information about various types of claims, a task that clerical personnel performed frequently. Because the classroom exercise closely paralleled an everyday job task, workers could practice and learn this skill more quickly.

Transfer to New Applications Is Severely Limited

Many people mistakenly think that any sort of literacy instruction will translate to improved learner skills on the job. College-educated adults often make this mistake because they are able to apply their own high level literacy skills to learning and meeting the demands of new jobs. They can do this because the literally thousands of hours that they have invested in literacy use has provided them with a high level of skills and excess general literacy capacity.

The same situation is not true of low and middle level literates, however. They have practiced little and have no excess capacity. In fact, for a person who has not read much and struggles with a newspaper, new workplace literacy demands may be more difficult than anything ever read before. They have no excess of general literacy capacity to support learning new technical literacy vocabulary and strategies. A couple of months of general literacy instruction at four hours a week will provide only a slight improvement in general literacy skills, and usually shows no noticeable impact on the ability to apply general literacy to technical applications.

In fact, research indicates that there is a severe limitation to how much literacy transfers from one type of task to other types of tasks (Kirsch & Jungeblut, 1986). The limitations of literacy transfer have serious implications for workplace literacy programs. This is especially true if programs attempt to use traditional, school-type materials. Sticht (1982) found that general literacy instruction only transferred minimally to job applications. He now recommends a "functional context" approach, which teaches skills using materials that learners use on a daily basis (Sticht, 1982). If a small amount of instruction is all that is available and improved workplace practice is the goal, it is wiser to target instruction directly upon specific workplace demands.

EXAMPLE: In the insurance company just mentioned, clerical workers were able to decrease the time required to find claims information because their instruction used the same manual that they used daily on the job.

Significant Learning Loss Occurs Without Regular Practice

Lack of transfer is related to the problem of learning loss. When a person cannot transfer learning to real-world situations, opportunities to practice new skills during everyday activities on the job are lost. Sticht (1982) reports that military enlisted men improved in general literacy abilities while they were in general literacy classes, but that 80% of the gains were lost within eight weeks. However, when job-related materials were used to teach literacy abilities, learning gains were retained. This is most likely because learners could continue practicing on the job the abilities that they had mastered.

If it is to be effective in the short term, instruction should not overly emphasize general materials that have no relationship to materials workers see daily. The timing for instruction in workplace skills is also important. Preparing learners for the basic skill demands of new jobs may be wasted if they must wait several months before they are able to apply and practice their new learning.

EXAMPLE: Since the instruction for insurance clerical personnel described above was designed to correspond closely to their jobs, learners were able to gain additional practice each time they searched for claims information on the job. In addition, timing the instruction to correspond closely to the time when skills would be needed also enhanced learners' ability to recall what they had just learned. This is sometimes called just-in-time training.

In summary, when designing a literacy program, it is necessary to consider four constraints that will affect the program's success. Because workers' skills vary widely, you should design a multi-strand program that can address a variety of learner needs. Workplace literacy also requires a long-term commitment, since improvement requires a significant amount of practice time (e.g., average adult basic education programs take about 100 hours for the equivalent of one grade level gain). There is no such thing as a "quick-fix" solution to literacy skill problems. To gain improvement in job performance, literacy skills should be taught using job-related materials, not general educational materials that do not provide a clear link to the job. Finally, instruction must provide opportunities for practice in a timely manner, or else newly-acquired skills will be lost before they can be used on the job.

Educators can provide opportunities for additional practice by also emphasizing reading materials from home that are of general interest to learners. Even when those materials are not similar to those used in the workplace, benefits can still be gained when learners spend additional time reading. It may also be possible to incorporate documents from home (e.g., tables from newspaper articles, diagrams found in home repair manuals, bills, store ads) that parallel job materials. For example, in a course that teaches the use of percentages on the job, examples of store ads advertising percentages off regular prices could be used to provide additional practice at this skill.

Labor Market Trends

There are a number of recent trends in the labor market that have started to influence the need for workplace education and the nature of the programs provided.

- The Shift From Manufacturing to the Service Sector
- The Growth in High-Performance Workplaces
- Increased Use of Workplace Literacy
- Increase in Temporary and Part-Time Work

The Shift From Manufacturing to the Service Sector

- Since 1965, the United States has experienced a large shift in employment from manufacturing to service sector jobs.
- In the past, it was possible to earn more in manufacturing jobs that demanded less skill.
- Many workers find that they must now have higher literacy skills to get jobs that pay less.
- This can have serious motivational consequences for those workers, which must be addressed by workplace educators.

In the last 30 years, the United States has experienced a dramatic shift in employment from jobs in the manufacturing industries to jobs in the service sector. In 1965, 29.7% of the workforce was employed in manufacturing, but by 1993, that number had decreased to only 16.3% of workers. On the other hand, the service sector has increased from employing 63.9% of the workforce in 1965 to 79.0% in 1993 (Monthly Labor Review, 1966, 1994). In the past, it was possible for many people to earn middle-class incomes while working in manufacturing, and they were not required to have high school diplomas or advanced literacy skills to remain employed. However, the shift towards employment in services has meant that people must have higher literacy skills to get jobs that pay less (Borjas & Ramey, 1994; Gittleman, 1994; Moore & Blake, 1992).

This increase in the number of demanding jobs that pay less may have serious motivational consequences for workers. If a program is to be successful, the workers' motivation for enrolling in the program should be considered during the early stages of planning. For example, some workers may enroll to improve their chances for advancement to higher paying positions. They may also fear losing their jobs due to a perceived inability to keep up with increased skill demands, or perhaps they may be seeking new employment. Some may see it as an opportunity never offered to them before to improve their basic skills and work life. To accomplish its goals, the program must have the support of workers by meeting their goals and needs.

EXAMPLE: In a food manufacturing plant, some production employees were enrolling in a program because a new computer system was being installed, and they feared that they might not be able to adjust to the demands of this new technology. Instruction incorporated job simulation exercises that demonstrated how to use the new computer system. Therefore, it taught basic technical skills while addressing a motivational need.

THE GROWTH IN HIGH-PERFORMANCE WORKPLACES

- Increasing numbers of businesses are adopting high performance techniques, such as quality assurance teams and greater use of technology.
- High-performance workplaces have greater demand for higher skilled workers.
- Fewer jobs are available but with more responsibility.
- Education should focus on skills that will help workers cope with those additional responsibilities.

One trend that affects both service sector and manufacturing jobs is the extent to which organizations are forming "high performance workplaces." The goal of a high performance workplace is to increase productivity by cutting bureaucracy and putting greater responsibility for quality on front-line workers. For example, in manufacturing plants that employ high performance practices, production employees may be asked to track machine efficiencies on a chart and then compute the total production efficiency for their shift, both tasks previously performed by supervisors.

Currently, approximately 35% of businesses are employing some form of high performance workplace technique, such as

- quality assurance teams,
- increased use of technology,
- statistical process control, and
- just-in-time production (i.e., producing parts as needed rather than accumulating an inventory).

These techniques often involve layoffs as work is reorganized. The skill demands made on remaining workers are increased as a result. (For examples of high performance workplace practices, see Bassi, 1992; Gordon, 1993; Osterman, 1993; Richman, 1994). In many workplaces, the employees are not able to make the necessary adjustments at first, and extensive workplace literacy education is required to improve their skills (Chisman et al., 1992). Such changes also produce considerable stress in workers as jobs are lost and greater demands are made on those remaining. Educators need to be sympathetic to these stresses and make sure that they are not seen as management agents imposing change, but rather as facilitators helping workers come to terms with the new situation and providing constructive assistance in dealing with changed work practices.

In these situations, instruction should focus on skills that will help learners cope with their added responsibilities. It should also provide opportunities to practice the new skills so that productivity will be maintained.

EXAMPLE: A credit card company reorganized its staff of telephone operators whose job it had been to answer calls from cardholders and route them to the appropriate department so that their questions could be answered. But due to reductions in the size of each department, operators were asked to answer some questions from customers themselves. The operators required instruction in

- skim reading, in order to read a job aid that helps them decide how to handle calls;
- decision making, in order to help them decide when to answer a question or forward the call to someone else;
- communication, in order to understand the customers' problems and resolve them; and
- writing, in order to allow them to record accurately how calls are handled.

These were new skills, best learned and practiced in a job-related context.

INCREASED USE OF LITERACY IN THE WORKPLACE

- Workplaces use a combination of prose, document, and quantitative literacy.
- Different skills are often used together.
- Instruction should use realistic simulations to provide a link to the way skills are used on the job

The demands made on the skills of workers are increasing all the time. As part of teamwork, planning, and quality control, workers need to be able to solve problems that often involve the application of several skills. Literacy in the workplace requires a combination of

- prose literacy (e.g., manuals, newsletters, memos),
- document literacy (e.g., tables, forms, charts), and
- quantitative literacy (e.g., calculating, solving problems with numbers).

Also the different types of skills required—calculation, reading charts or other technical material, handling data, problem solving—are often used together to perform a workplace task.

EXAMPLE: In high-performance workplaces, teams of workers representing activities at various stages of production often meet in what are called "quality assurance teams." Teams of 4 to 6 workers are assigned the task of solving a production problem such as excess inventory. Allowing excess inventory to build up in one production area may lead to spoilage, breakage, unnecessarily high storage costs, and other problems. To solve problems like this, they will have to:

- read inventory graphs, charts, records, or reports;
- synthesize all this information;
- brainstorm for possible solutions;
- discuss their ideas; and
- write a brief proposal to management explaining how to solve the problem.

In such a case, classroom job simulation exercises that use the context of a realistic production problem can provide the link between the various literacy skills and employees' jobs.

INCREASE IN TEMPORARY AND PART-TIME WORK

- Due to the ever-increasing costs of long-term employment commitments (such as benefits), employers are less likely to invest in permanent, full-time employees.
- Individual workers will therefore have more major job changes over their lifetimes.
- Temporary workers face higher and more varied literacy requirements, as they move from job to job.
- They will require education in flexible skills such as using resources to solve problems and answer questions on the job.

Another phenomenon with fundamental training implications is the increase in temporary, contingent, and part-time work (Bureau of Labor Statistics, 1992; Gordon, 1993; Judis, 1994). Employers in the United States are using these workers increasingly as a means of reducing fixed labor costs such as benefits and long-term employment commitments. As long-term commitments by employers decrease, more workers will have more major job changes throughout their careers. Temporary and contingent workers also face higher literacy requirements. They must be facile learners who can constantly adjust to new skill demands as their work environment changes.

Recognizing that temporary and part-time workers may frequently change job responsibilities, it might not always be practical to train them in the specifics of a particular job task and its corresponding literacy skills. Instead, you should help them develop skills that can have some transfer to other tasks.

EXAMPLE: One large company that contracted temporary employees changed its training program from one that taught employees specific computer applications to one that taught them how to locate information and solve problems. Rather than just being trained to use specific software packages, they were also trained to use manuals to find information and apply that information to answer a question or solve a problem.

Having learned to use resources to solve a problem, employees can transfer these skills and become more independent as their responsibilities change.

WORKER POPULATIONS

LOW LEVELS OF WORKER SKILLS

- The National Adult Literacy Survey (NALS) shows that one half to three fourths of workers in certain job categories perform at the lower two levels of the survey.
- Job literacy requirements are increasingly at Level 3 or above.
- Workplace instruction should focus on these more demanding job tasks, and build in practice of the necessary skills.
- Opportunities should be provided for long-term education for learners at the lowest levels if improvement is expected.

To give some idea of the actual skills of workers, consider some of the results of the recent National Adult Literacy Survey (NALS; National Center for Educational Statistics, 1993). The survey uses various realistic tasks in the three skill areas of prose literacy (e.g., identifying facts in an article or report), document literacy (e.g., finding information in a bar graph, locating points on a map), and quantitative literacy (e.g., calculating total costs of a purchase, figuring sales tax). The percentage of adults correctly completing the tasks was used to establish task difficulty ratings along a 0–500 scale. Then, each adult surveyed was given a proficiency score on the same scale according to the tasks successfully completed. For example, the task "Total a simple bank deposit entry" was rated at 191 on the quantitative scale, and adults with a proficiency score of 191 would be given that score because they had a high probability (80%) of completing that item. These people would then have a steadily decreasing probability of success with more difficult tasks that were given higher ratings of 250, 300, 350, and so forth.

In addition to the scale scores, the tasks are further divided into five levels of difficulty, ranging from the simple (i.e., tasks with a scale score of 150 are assigned to Level 1), to the complex (i.e., tasks at 500 are assigned to Level 5). Learners' proficiency scores are then used to group them into the five levels. For example, a learner who achieves a scale score of 250 on the document literacy portion of the survey is said to be at Level 2. Thus, this individual has an 80% chance of successfully completing Level 2 tasks (e.g., locating an intersection on a street map), but somewhat less chance of successfully completing higher level tasks (e.g., using a table to determine the pattern in oil exports across years, Level 4). Therefore, it is important to remember that when a group is described as being at Level 2 on the NALS, it does not mean that they are totally incapable of completing higher level tasks, only that the chance of successfully doing so is somewhat decreased.

Data from the NALS show that from one half to three fourths of workers in certain job categories (e.g., transportation, service, farming, laborer) perform at the lower Levels 1 and 2 on the prose, document, and quantitative scales. In addition, surprising numbers of high-level job holders (e.g., managers, administrators, professionals) also scored at the lower two levels of the survey (National Center for Educational Statistics, 1993). Today's high performance workplaces are increasingly requiring tasks at Levels 3, 4, and 5, which call for solving problems, calculating, synthesizing information from several sources, and using such a synthesis to make decisions. Individuals at Levels 1 and 2 on the NALS can expect to face increasing difficulties. Although results from the NALS may appear to indicate a serious problem in the workforce, these results do not imply that workers are completely unable to perform some parts of their jobs, only that they may not be able to solve more difficult problems accurately at least 80% of the time. Also, familiarity with a situation will usually allow a worker to perform at a higher level than with an unfamiliar problem. But, in this time of changing workplaces, many workers are finding themselves dealing with new situations on a daily basis.

EXAMPLE: In a food manufacturing plant, management began to place an increased emphasis on quality control as a means to improve the plant's efficiency, but due to decreased sales, cutbacks were made in the number of supervisors. Workers were asked to take over the task of calculating the efficiency of the production line for their shift, a task formerly performed by supervisors. This involved tracking the number of hours the line actually ran, calculating with these numbers, converting the answer to a percentage, and recording it on a chart. To help workers take over this responsibility, a program was developed that used realistic scenarios and allowed for practice time. In addition, most learners used published math workbooks to brush up on their skills with percentages.

In high performance workplaces, workers are expected to perform more demanding job tasks such as the ones described in the example above. To make the most effective use of resources, literacy education should focus on the more demanding job tasks, with opportunities to practice the required skills and improve workers' chances of solving challenging problems successfully.

A test such as the Test of Applied Literacy Skills (TALS, which is derived from the NALS) or the CASAS Life Skills Assessment, can be used as a diagnostic tool to determine the actual skill levels of learners. Using one of these tests as opposed to a more general standardized test (e.g., the Test of Adult Basic Education, TABE) provides three important advantages. First, such tests use more realistic tasks that are similar to ones that workers may encounter in their jobs. In addition, the results will point out skill areas that may require extra practice. Finally, the results will help to identify learners who have less skill and may need more basic skills education before they are ready to enter job-related skills training. In this manner, low-level learners can receive long-term instruction that will enhance their skills more effectively than would a shorter, technical, or basic skills class.

- Workers with little English are over-represented in lower-skilled jobs, less likely to be provided with education from employers, and unemployed more often and have greater needs for education due to turnover.
- Such workers do not all have the same need for instruction in reading and writing, listening and speaking.
- Workers from other cultures may need help in making the shift to American workplace behaviors, attitudes, and expectations.
- Workers with little English are likely to learn more quickly if they are taught in the context of the job and outside interests.

Immigrants and their children, especially Hispanics and Asians, are projected to comprise an ever-increasing proportion of our workforce as they will our general population (Bureau of Labor Statistics, 1992). Currently, the Hispanic population is over-represented in lower skilled jobs that often do not require a high school diploma (Boisjoly & Duncan, 1994). In addition, Hispanics tend not to receive workplace education, and they tend to have less access to jobs that require some form of training to obtain (Amirault, 1992). Lack of literacy and communication skills causes Hispanics to suffer more unemployment in recessions. This, too, may suggest more need for retraining due to greater turnover (Boisjoly & Duncan, 1994).

Workers whose first language is not English are, of course, not a uniform group. Some have very little formal education in their first language, others have college degrees. Some may speak English moderately well, but have difficulty reading it, while others know very little English at all. Factors such as these will produce very different rates of English literacy acquisition and therefore vastly different requirements for instruction. For example, one ESL class may concentrate on the skills of listening and speaking to establish basic communication in the workplace, while another class teaches workers how to read safety rules and write brief memos.

For workers from other cultures, an additional factor needs to be addressed. They may bring attitudes and behaviors about work, bosses, teams, time-keeping, and other issues different from those prevailing in an American workplace. They may, for example, be accustomed to taking orders without question or come from a culture in which public criticism involves serious loss of face, and so have difficulty adjusting to a teamwork approach, which involves volunteering ideas and discussing problems and their solutions. Body language is an important component in personal interactions, and it too differs from country to country. Such cultural differences need to be brought out in the open during class, so that workers can be encouraged and assisted in making the necessary cultural shift to accommodate to American workplace behaviors, attitudes, and expectations.

To facilitate workers' ability to learn English and to do their jobs, language should be taught within the context of the job and outside interests. In addition to using published workbooks, relevant vocabulary and grammatical constructions should be defined and discussed with the learners using realistic scenarios accompanied, whenever possible, by visual aids such as the equipment or print materials used on the job.

EXAMPLE: In a hospital, environmental services employees with little English were taught the names of safety clothing (e.g., mask, gloves, safety glasses) and when to use them. Actual equipment was brought into the classroom to use in role-play situations similar to those met on the job, so that the objects, their names, and their uses could be clearly associated. The class then discussed the importance of wearing safety clothing, to reinforce the role-play scenarios and provide further practice with the new vocabulary.

Similar techniques could be used with objects or printed materials that relate to outside interests such as hobbies, or to life skills such as paying bills and performing routine errands. It is worth noting that, for many ESL learners, workplace literacy classes may be their first exposure to written English in a learning environment.

CHARACTERISTICS OF EFFECTIVE PROGRAMS

EFFECTIVE WORKPLACE LITERACY PROGRAMS ARE CHARACTERIZED BY

- multiple strands of instruction that address learner needs and allow a succession of learning experiences for long-term education;
- the involvement of all major stakeholders, including workers, supervisors, managers, and educators; and
- custom-designed curriculum that integrates basic skills instruction with workplace applications and materials.

MULTI-STRAND PROGRAMS

- Multi-strand programs should address the needs of diverse populations on a long-term basis.
- They should also address the needs of low-level learners by providing a sequence of learning experiences from basic to more advanced instruction.
- A multi-strand program can expand from small beginnings to meet the needs of all workers.

Multi-strand programs have two major advantages over general education programs or short-term, "quick-fix" training. First, programs that have multiple strands can address the concerns of various populations such as learners whose skill levels and job requirements differ. For example, one strand may teach quality control workers to use averages as part of statistical process control, while another strand may assist workers with obtaining their GED certificate. Multi-strand programs can also be implemented gradually, allowing workers to improve their basic skills, move into higher level technical training, and eventually complete technical education courses at a community college.

A second major advantage is the assistance that multi-strand programs can provide for low-level learners. Through testing, low-level learners can be identified and encouraged to participate in general education to prepare them for major job changes or more advanced literacy classes. Thus, multiple strands can allow a program to be implemented gradually, focusing on critical issues first and then expanding to meet the needs of all workers.

EXAMPLE: A manufacturing plant's literacy program began with general education for two reasons. First, offering general education was less demanding for the instructors, since it relies primarily on published materials. More important though, this strand satisfied the workers' concern that it would provide personal benefits such as obtaining a GED certificate. Later, more strands were added that addressed both management's and workers' concerns, such as completing time cards and insurance claim forms correctly.

Involvement of Major Stakeholders

- The support of management, workers, and union members is important to the success of any workplace program.
- A good way to achieve this is to form an advisory committee made up of representatives from the key groups in the workplace.
- Involvement in the planning stages increases the likelihood that stakeholders will buy in to the program.

The support of management, workers, and union members is important to the success of your program. Creating an advisory committee made up of representatives from the key groups in the workplace is a good way to decide how a program will proceed. You will hear the views of the other partners, and the members of the committee will also hear from each other. In this situation, they are more likely to realize the need for consensus than if each group meets separately with the program planners,–or worse, is left out of the process altogether.

As an educator, you may talk first to management because of a perceived problem that is costing money. For example, the organization could be undergoing a major change such as the introduction of new technology, and employees may be having difficulty adjusting to the new skill requirements. You will need to identify specific problems and obtain information on their cost to the organization, so that instruction can be custom designed to address these concerns.

It is also important to discover workers' needs and concerns, which may be different from management's, and encourage them to buy into the program. In a union setting, find out about union goals by talking with representatives, and then involve them in program planning at the outset. If the union has educational goals involving general education and personal development (e.g., a need for GED instruction or a course on managing personal finances), strands can be implemented to meet these goals.

In a non-union setting, ask if there are appointed representatives who can discuss workers' needs. If there are no such representatives, try to meet with workers and get to know them informally, perhaps by talking to people in the employee cafeteria during break times. Then approach several people who are willing to discuss workers' needs in greater detail. You might also ask supervisors whom they would recommend that you approach. In either non-union or union workplaces, it is also possible to survey all employees about their interests, and develop one or more strands to address these.

EXAMPLE: In the manufacturing plant mentioned earlier, the program began with a general education strand that included GED preparation. This program allowed workers' individual needs to be addressed. Since participation was voluntary, starting with this strand established a reputation for being open and responsive to workers, an effective tool for recruiting additional learners. Within a short time, a second strand was added that provided instruction in job-related skills for one of the most common production jobs in the plant. Later, after these two strands were established, workers were surveyed concerning their general interests. In this survey, employees expressed an interest in learning more about their health insurance benefits, especially how to complete claim forms. A brief course on this topic was developed and several sessions were offered to accommodate different schedules. Thus, concerns of both workers and management were met in a timely manner.

CUSTOM-DESIGNED CURRICULUM

- takes learner interests into account,
- is based on an analysis of job tasks and skills, and
- uses materials from workers' jobs.

The education program that you develop will use some off-the-shelf materials for strands such as general education for low-level learners and GED preparation, but it will also incorporate custom-designed instruction. Customizing the curriculum will allow you to meet the needs of both management and workers.

Using program resources to meet the workers' interests allows them to take an early and active part in planning and developing the program. This will eliminate their concern that management is trying to "fix" a problem workforce, and instead communicate a desire to invest in people. Learners will buy into the program, increasing enrollment and retention.

Some of the custom-designed strands of the program will be based on task analysis. This involves interviewing and observing employees who are expert at their jobs to document job tasks and supporting skills. While more time-consuming than using pre-packaged educational materials, instruction that uses material from workers' jobs will provide a direct link between the skill and the job, with immediate reinforcement of skills learned, thus increasing practice time and speeding up the learning process.

EXAMPLE: In a food manufacturing plant, task analysis was used to discover the skills necessary to perform each job. Print materials were also collected and later used in class as the basis for custom-designed class activities. In the plant, task analysis of the production line jobs revealed a problem with reading manuals that contained piping diagrams. Instruction was developed that taught workers how to read and interpret these diagrams. This enabled workers to use the production manuals to solve problems rather than wasting time waiting to ask supervisors. As a result, down time was decreased and the overall efficiency of the plant increased.

Chapter Summary

Over the past two decades, research has revealed important information that characterizes literacy education in the workplace. Organizations face multiple challenges with regard to workers' skills and the ever-increasing demands of jobs. Programs that have multiple strands (e.g., general education for low-level learners, GED preparation, job-related skills classes) are able to address these issues most effectively. Improvement requires significant practice time, often more than is available in classes. Programs have compensated for this lack of time by providing additional practice time at home and by using materials that are job-related to gain practice as learners perform their jobs. To ensure that skills will have an impact on job performance, instruction should be targeted to specific job tasks. Besides increasing practice time, using job-related materials increases learners' ability to transfer skills directly to the job, thereby increasing productivity. Since new skills are lost without regular practice, instruction should also be timed to correspond closely to when the new skills will be used on the job, or else learning may be lost.

The changing labor market also plays a significant role in the nature of workplace literacy programs. Labor market trends such as the shift to more service sector jobs, high performance workplaces, increased use of literacy, and increasing temporary and part-time work all influence the need for workplace education. Instructors and program developers should strive to make programs relevant to workers' needs such as the need for flexible skills that will apply to a variety of jobs, and the need for increased skill in high-performance workplaces that use techniques such as increased quality control. Programs should also address such concerns as low levels of worker skills and immigrants with little English. Long-term programs that begin with basic reading, document, and quantitative skills, and advance to job-related skills education and beyond will help learners improve productivity and address personal needs such as improving chances for advancement.

As programs are planned and implemented, educators should concern themselves with three important workplace education needs. These are involving stakeholders in the early stages of planning, developing programs with multiple strands to address multiple needs, and custom-designing the curriculum to suit particular jobs and skill areas. Details about planning and analyzing the needs of the workplace will be discussed in Chapter Two.

CHAPTER TWO

PLANNING A WORKPLACE LITERACY PROGRAM

This chapter provides guidance on the following topics:

- analyzing the need for literacy education,
- addressing the needs of various groups within a workplace,
- using non-training solutions to increase instructional effectiveness,
- locating sources of funding and resources,
- planning the logistics of a program, and
- developing a shared vision.

EFFECTIVE WORKPLACE LITERACY PROGRAMS

A growing body of research has identified certain characteristics associated with effective workplace literacy programs. Relatively few workplace programs meet all these criteria, but the degree to which they can be met appears directly related to their success:

- Multi-strand programs are an effective way to meet the demands of the diverse populations within a workplace.
- Custom-designed materials integrate basic skills instruction with workplace instruction.
- Forming an advisory committee involves major stakeholders in the planning process.
- Planning for long-term educational goals allows workers—and the program—to grow.

It is important to realize that we face several literacy issues in the workplace and not just one. Therefore, no single class or course can meet the demands of the diverse populations within a workplace. By using a multi-strand approach with several different types of courses and strings of educational experiences, you can meet more needs and build on previous learning experiences. The aim of the program, which needs to be agreed on by all stakeholders, should be to address long-term educational goals while satisfying short-term needs.

EXAMPLE: At an auto manufacturing plant, short courses on safety procedures for new equipment were offered to learners. After completing these courses, learners were able to select from additional educational experiences such as GED or technical courses.

Another characteristic of effective programs is using custom-designed materials that integrate basic skills instruction with workplace applications.

When a person cannot transfer learning to real-world situations, he or she cannot continue to practice what has been learned. Custom-designed materials link instruction directly to workplace demands and allow the learner to build on previous knowledge.

Having an advisory committee play an active and consistent role in developing and monitoring the program is important to its long-term effectiveness. The committee can introduce you to the workforce, provide valuable information and insight about the workplace, determine what resources are available, assist you in deciding which groups of workers to target first, and help gather information and recruit students. Depending on the organization, your advisory committee might include employees, administrators, representatives from unions or other partner organizations, departmental supervisors, and members of the company training department.

Since few programs can initially meet all these criteria, try to emphasize first what you can accommodate in your own program. You might have to start small, but it is important to build a vision for your program's future. Ask employees to suggest future courses that they would be interesting in taking. Also, be aware of current and future educational needs that are not being addressed. By building on employees' interests and the future needs of the company, you will develop a stronger program.

EXAMPLE: At the auto manufacturing plant mentioned earlier, the literacy program began with short courses on safety procedures. Instructors learned from the workers attending these classes about other needs and interests—such as a GED class, which was started soon after. The plant was also setting up work teams, requiring better communication skills, and introducing statistical process control. To meet this new need, both management and union wanted classes on writing memos and meeting minutes, and on basic math leading toward calculating averages and plotting graphs. Thus, over a period of a few years, the program grew from its initial one course to a true multi-strand program, satisfying the needs of that workplace.

PLANNING AHEAD

In determining the specifics of your program, the following activities will help you to plan ahead. You should first analyze the needs and wants of both the company and the employees. Find out where the problems are—are there communication problems between management and employees, are there skills that workers need to improve? After you have found out where needs are, you then determine whether a literacy program will help meet those needs. If such education will help, then you have to decide what types of courses will be offered and to whom they will be offered. Also analyze what types of non-training solutions will be important to the success of your program.

Finding money for workplace literacy programs can be a challenge. Even when the company or union funds them, it is important to look for other sources of money. You can also look for opportunities to share resources with other company departments or other organizations. By planning ahead, you can build a more effective and successful workplace literacy program.

Analyzing the Need for Education

- *"Where is the pain?"*—what problems are causing real concern for the employees and company.
- Gather information through interviews and surveys, and by observing daily operations in the workplace.
- Determine which areas of company performance need improvement: find out the differences between where the company and the workers are and where they want or need to be.
- Define which problems are most pressing and determine whether they can be solved through education.

Before planning a program, you should analyze the workplace situation in general. Find out the differences between where the company and the workers are and where they want or need to be. What are the needs and wants of the employees, the company, and the union? What do the stakeholders expect your program to achieve? For example, some employees may want to raise their general educational level in order to obtain a GED certificate. The company may want all workers to be able to carry out statistical process control procedures. Or a union may want to increase their members' knowledge about health benefits.

You can find out this information by conducting a needs analysis. A needs analysis can take many different forms and can vary in depth and comprehensiveness. The type of needs analysis you do is often dictated by the amount of time and money you have available. A needs analysis is done by arranging focus groups, interviewing people one on one, asking people to complete surveys, and observing daily operations in the workplace.

Suppose the company wants to raise the job skills of the workforce. By interviewing a broad range of employees, managers, and supervisors, you can find whether performance problems exist and what they are. By asking "Where is the pain?"—what problems are causing real concern for the employees and company—you can then assess whether a literacy program will help solve the problems.

These are all things you should consider when doing a needs analysis.

- Are there problems with manuals not matching manufacturing procedures?
- Do employees need extra assistance with completing paperwork?
- Are there accidents caused by the inability to read directions?
- Is management not communicating effectively with employees?
- Do employees have appropriate workspaces?
- Is there a lack of motivation or incentive among employees?

After determining what the needs are, you must then define which problems are most pressing and decide whether they can be solved through education. An advisory committee can help guide this process by helping you become familiar with both employees and the company.

When doing a needs analysis, you should get all stakeholders involved in the process from the beginning. They can provide valuable information about the workplace and its needs. They can also help with analyzing problems and recommending solutions for them. It is important to analyze the job tasks in the workplace. During interviews and observations, you document the tasks involved in doing a particular job. At the same time, you collect samples of printed materials and discuss them with employees and supervisors. These materials will later form the basis of your custom-designed curriculum. (See Chapter 3 for more information on this topic.)

Conducting a needs analysis is an important part of planning a program. As a program planner, you should make sure that you are providing a service that is needed. Sometimes there are other problems such as conflicts between management and workers, an error in the manufacturing process, or an ineffective organizational structure. A literacy program will not help solve these problems. So you should not assume that low literacy levels are causing problems, even when management tells you so. You need to investigate the situation thoroughly before planning any program or course.

EXAMPLE: At one small manufacturing company, a literacy instructor was hired to work with the maintenance staff. The company's management thought the employees were having literacy-related problems since they were not completing a certain form properly. The company had recently changed its policy, and employees now had to complete a form to request certain machine parts. But after testing these employees, the instructor found out that the problems were not literacy related. The employees were in fact unhappy with the management's lack of communication about a new policy and they were deliberately not completing the forms correctly. However, those workers did later report other sorts of literacy areas in which they did want help.

When making recommendations for changes, be aware that you may have to deal with corporate politics. Companies are not often responsive to outsiders coming in and making suggestions for improvement. From the beginning, you need to make it clear that you are doing this to determine their literacy needs. You may also be helping the company by preventing unnecessary training programs. You should periodically re-evaluate the need for future educational programs.

DESIGNING THE PROGRAM

- Address the needs of both the employees and the company.
- Create a balance of workplace demands and learner interests.
- Offer multi-strand programs to meet the needs of various workplace groups.
- Involve workers in developing and recruiting for your program.

Designing a customized program that integrates workplace demands with other types of educational skills will help better meet the needs of both the employees and the employer. Custom-designed programs can help cut hidden costs associated with low-level literacy within a company. Reworking, retraining, and accidents can be very costly. The money saved can often more than pay for a literacy program. Also, if you present the specific needs and how they will be solved, more people in the company will be able to see the relevance of instruction that is directed at real problems.

It is important to balance the program by addressing the employee's outside needs and interests as well as workplace needs. Combining job skills instruction with life skill materials such as medical information or appliance repair makes the instruction more relevant and more effective. For example, if your program has a course designed to teach employees to use workplace charts and graphs, you could also provide instruction in using charts and graphs for items used at home such as nutritional information charts. This will maximize the effectiveness of your program by allowing learners to extend and practice their skills. It is important to find out what specific types of education employees are interested in and integrate that education into your program. By offering classes that address employees' goals and interests, you will directly address their personal needs and encourage them to apply their new skills in other areas. Gaining employees' buy-in for your program will be important to its future success. They will help you recruit other students and make it a more effective program.

Increasingly, programs in business and industry are becoming multi-strand programs. In such programs, one instructional strand might address the needs of English as Second Language learners, another strand might help learners prepare for GED certificates, and additional strands might help high school graduates brush up on skills before preparing for technical training. The instructional format may vary from structured classes to small group instruction, to computer-guided instruction, to individual tutoring. Some learners will, over several years, move from one strand to others.

EXAMPLE: In a multi-strand program for correctional officers at a women's prison facility, instruction was delivered in three strands. The first strand was designed to help officers improve their report writing skills, so that reports on offenders could become more effective at disciplinary hearings. The second strand focused on promotions support and addressed the employee population interested in preparing for job advancement. This course helped learners prepare for advancement as well as upgrade their skills for other post-secondary instruction. A third strand addressed family literacy skills and taught parents how to read and share books with their children. This encouraged learners to maintain and extend their own literacy gains while helping their children develop skills at home.

Employees are not passive receivers of instruction—they are partners. They can become a valuable resource for helping you plan, develop, and evaluate a program. They can tell you how things are really done at the company, where the problems are occurring, what types of education are needed, and what courses would be valuable to them as individuals. They are also a valuable resource for publicizing and recruiting, as well as for evaluating a course or program.

EXAMPLE: In a literacy program at a manufacturing company, employees helped gather data to plan courses, helped develop the curriculum, helped delivered the instruction, and evaluated the program. Employees contributed knowledge based on their job responsibilities and expertise. Course participants were especially helpful in specifying which areas of instruction were not related to the actual jobs or which job practices did not follow company instructions. They also suggested course revisions through interviews and surveys. Their assistance not only helped improve their own instruction, it also helped improve the design of future courses. Since they were involved in course development, they bought into the program and helped recruit other students.

Teachers and educational coordinators developing workplace literacy programs must confront many issues. However, if you listen carefully, you will hear both employees and management saying what problems and desires are most pressing or persistent. This will help you determine what types of classes to offer. Your goal is to create courses that address the actual needs and goals of the employee and employer.

Addressing the Needs and Goals of Various Groups

- Multiple program strands are needed to address multiple problems.
- Improvement takes significant learner practice time, and varies greatly depending on the learners and the material.

When designing a program, it is important to realize that we face several literacy problems in the workplace, not just one. The person who cannot read at all requires a different type of support from than the high school graduate who is unable to meet the new reading demands of his job. People educated in a foreign language and not speaking much English require another type of support. Providing the same services and programs to such different clients makes no sense, and yet it sometimes occurs. (A program just starting out, however, may have limited resources and a low enrollment, and therefore be obliged to teach mixed groups. In such classes, the teacher must find ways of catering to all needs, and could include individual work and large and small group activities as appropriate.)

You will find that there are no magic pills in terms of improving literacy skills, and the time needed to make considerable improvement varies greatly. Factors like the literacy levels of students entering a program, the complexity of material being taught, and the speed at which students are able to learn all affect the amount of time needed for various groups. We will now consider several groups in the workforce and their possible goals and needs.

HIGH SCHOOL GRADUATES

Often high school graduates who have been out of school for several years may need a refresher before receiving further training. Some may need to brush up on their reading or math skills due to new demands on the job. These needs should be taken into consideration when designing a program. Short, targeted courses may be the best answer.

HIGH SCHOOL NON GRADUATES

People who did not graduate from high school may be interested in obtaining their General Educational Development (GED) certificate. These people often need to brush up on basic education skills before doing this. Some may also be interested in furthering their education beyond high school. Providing information about two-year degrees and other educational opportunities should be part of instruction.

PART-TIME EMPLOYEES

Part-time employees often have specific educational needs but may not be included in company-sponsored training. Many part-time employees are former full-time employees who have been affected by downsizing or a shrinking job market. So it is important to address the specific job-related needs of part-time employees, and if relevant, provide training in job search strategies. Linkage to community-supported programs can also be included.

VERY LOW LEVEL LITERATES

One of the common myths about workplace literacy programs is that all the students are functioning at very low levels. This is not the case—less than 3% of adults read at or below a second-grade level. However, if testing reveals a significant number of adult very low-level literates in your workplace, you will need to decide if you can help them or need to refer them to other programs. For this group to improve to the point of being able to read a manual or a newspaper, it takes several hundred hours of practice and often one-on-one tutoring. For some severely learning disabled adults, comprehending high school level training material may simply be out of reach. Working with local literacy providers or setting up a peer tutoring service in the workplace can provide an opportunity for you to find out who in this group can be helped by you. If you are considering a peer tutoring system, you need to check whether there will be any problem with learner confidentiality or possible social stigma for those in need of help.

Others in the workplace may be middle-level literates who have only recently encountered demands beyond their abilities. Some adults can work their way through simple sentences but are not prepared to handle extended written instruction, manuals, or new training material. This group can make fairly rapid gains in a hundred hours or so if instruction is focused and effective. It is important to use job materials so learners can practice their skills and knowledge daily at work. Linking to home interests can further extend practice.

To help these people, look at what the students really "need to know" for the job and "want to know" for home use. Teaching material that is "nice to know" adds class time and frustration. Be flexible and creative in the range of methods that your teachers use. Provide these students with materials that they can keep so that they can refer back to instruction and notes. It is also very helpful to plan a definite scope and sequence to all instruction, and create many short-term visible goals.

ENGLISH AS A SECOND LANGUAGE

Increasingly, many of the people entering the workplace are not native speakers of English. They can often make rapid gains if their educational needs are met directly. Most of the suggestions made for low-level literates are applicable to ESL learners. In addition, you should determine specifically what the actual language needs are. Find out the areas of oral or print communication that call for the most immediate help. You can design many customized materials for ESL learners, such as how to complete a job application, how to read safety instructions, and how to use the telephone. Using role playing for specific situations such as how to start a conversation in English is also helpful. Role play and discussion of cultural differences between the members of the class and American society can help ease tensions by bringing such issues out in the open. Group activities calling for simple oral language use pay dividends in later literacy development.

In addition, you can provide these students with simple texts and workbooks, so they have something to take home for further practice. You should encourage them to share their knowledge with their families. When working with ESL learners, be aware that some of the students may not have had a great deal of education in their first language. This often makes it more difficult to learn a second language. Others, however, may have had a high level of education in their first language. Find out all you can and try not to make assumptions based on English mastery alone.

OTHER LEARNER NEEDS

Sometimes your program does not currently have the resources to address all the students' needs. Learners might need something other than what your program offers. When working with various groups of students, be aware of other resources in your area. Have information on local colleges, technical schools, and GED programs. It also helps to have knowledge of resources such as social services, child care, care for aged, and other programs that might be needed to free employees to attend class.

Designing Non-Training Solutions

- Non-training solutions include providing job aids, redesigning forms, and rewriting instructions.
- But be careful—employers will not always be open to these types of changes.

While analyzing the needs of a workplace, you should determine if there are non-training solutions that would help increase the effectiveness of the program. Some non-training solutions include providing job aids for employees to help them remember tasks, redesigning forms to make them easier to use, rewriting instructions to make them clearer, and performing detailed task analyses to see if job design might be the problem.

EXAMPLE: Literacy instructors at a women's prison facility designed several job aids for correctional officers and counselors. One job aid, a 3x5 note card, was developed for taking notes to write conduct reports. It was designed to organize details quickly and completely. The job aid included prompts that acted as memory aids to the writer. For example, words such as "who, when, witnesses, evidence" were listed in a small notebook, so that officers could quickly jot down pertinent information. The back of the job aid consisted of a mini-glossary of words often found in these types of reports. Correctional officers helped develop these glossaries themselves based on words that proved to be spelling or usage problems.

In order to identify which literacy and communication skills are causing problems, look at the entire situation. Build the relationship necessary to be able to make recommendations. Consider what non-training solutions might accompany or substitute for instruction and the cost of developing and providing these solutions. However, you should approach the issue of non-training solutions carefully. Employers will not always be open to these types of changes. For example, if a company spends hundreds of thousands of dollars on a manual to train employees to use a computer system, they might not be willing to have that manual rewritten and reproduced. They might, however, agree to developing a job aid to accompany the manual.

LOCATING RESOURCES AND PLANNING LOGISTICS

- Funding sources include state and federal grants, partnerships with libraries and colleges, workplace unions, and management.
- Program teachers are a crucial element and may need help with using job-related curriculum and becoming sensitive to the workplace culture. Above all, they must be flexible.
- Look for ways to share resources with unions, companies, and training departments.
- Discuss the scheduling of classes around the company's activities to achieve maximum cooperation.

LOCATING FUNDING SOURCES

There are several options for funding programs. Some external sources are state level grants, federal literacy grants, and partnerships with local libraries, colleges, and volunteer organizations. To get more information on federal and state grants, contact the U.S. Department of Education or your state department of adult or vocational education.

Many unions also offer viable funding sources because they recognize that technology is driving jobs and promotions, and that seniority no longer offers sufficient job protection. Larger unions are working to be model educational providers to their membership. Smaller unions and locals often work with management to develop local educational and support programs.

EXAMPLE: A literacy program at a textile manufacturer is funded from various sources. The manufacturer provides office and classroom space and supplies. The program also shares resources from other departments such as computer-based instruction programs and workplace manuals. The textile union funds the instructor's salary and the cost of materials such as books and an independent grant funds a portion of the family literacy strand offered at the company.

Use your advisory team to explore various funding possibilities. Consider ways to get multiple sources of funding. When considering funding sources, keep in mind that outside funds may need 100% employer match; federal funding is usually seed money to start programs; and there may be some delay in obtaining funds. Whatever funding path the company takes, make sure that you work with the person in direct budgetary control from start to finish.

Depending on your specific situation, you may have to write a proposal to fund your workplace literacy program. The proposal will define the program in terms of time, resources, support, and finances. It is important that your proposal be as clear and detailed as possible.

The proposal should include objectives and rationales for the program, a step-by-step outline of the project, an evaluation plan, a management plan detailing logistics and a timeline, a budget, and a listing of personnel involved.

Funding agencies usually have specific guidelines for how proposals should be written, but clear organization, concise writing, and a minimum of jargon form the foundation of a good proposal.

STAFF DEVELOPMENT

Program teachers are a crucial element of any workplace literacy program. Once instruction has started, they are the ones in day-to-day contact with the workers, and a program can succeed or fail depending on how well the teachers can interact with the learners in their classes.

Because workplace literacy is a growing area, many teachers in workplace programs are recruited from adult basic education or school settings, and have no experience of how to teach job-related curriculum. They may be accustomed to being the subject matter expert in an academic classroom, and so have some difficulty coming to terms with the shared responsibility of many workplace classes, where the learners are content experts on their jobs and teachers need to learn as well as teach. Another aspect of teaching in a workplace is sensitivity to the workplace climate and culture, and respect for the individuals as adults. Here again, the teacher can learn much from the workers, by listening carefully and not making assumptions about them or their jobs. In this way, a relationship of confidence can be established, which will facilitate teaching and learning.

Much of what a workplace instructor needs to know and do can be summed up in one word: flexibility. Teachers should always be prepared to learn from the workers in the class and adapt instruction to their immediate needs. More generally, a teacher's view of the whole workplace program should be similar to that of a program developer. This handbook can be a useful resource for training new workplace educators. The Appendix contains a series of summaries suitable for use on an overhead projector, to facilitate the task of a trainer.

However well a program has assessed the needs of a workplace, and however good a curriculum has been developed to meet those needs, it is ultimately the instructor in the classroom who determines the success of the program. It is therefore vital that a program selects good teachers and prepares them well for their role in the workplace.

ALLOCATING RESOURCES

Sufficient resources and their sensible use are very important in establishing a smoothly running program. Resources include money and personnel, but also relationships with key officials, facilities, supplies, storage space, and ways of advertising your services to employees.

When planning your program, discuss with both company and employee representatives the possibility of using shared resources. Here are some suggestions:

- Maintain relationships with the various departments of companies and call on them for ideas for solving problems.
- Negotiate with unions to draw on their expertise and to use their facilities. Some unions have classrooms that may be available to your program.

- Investigate using loaned resources. For example, having the company's computer programming department design your computer-based instruction may save money.
- Discuss in detail the facilities you will have to work in—it is very helpful to be able to stay in one area and not have your class locations shifted around.
- Find out what supplies and what trainers you can share with other departments, and negotiate with them.
- Arrange for some form of secure location or storage space so that supplies are not appropriated by other departments.
- Use the company's advertising department to design advertisements for the company newspaper.
- Have students contribute articles about the program to the company newspaper.

PLANNING PROGRAM SCHEDULES

Planning the logistics of a program can minimize potential problems with scheduling. Consider the company's production schedule and how you might incorporate classes into it. The classes must be as convenient as possible for everyone without interfering with business. Options include scheduling classes before and after shifts, and developing take-home lessons and computer-guided instruction to allow make-up time.

Other considerations include starting courses when the company has a slower production schedule. You could include whole departments while a line is temporarily closed as opposed to taking a few members from several different departments and allowing work to continue. Discuss the options with management, supervisors, teachers, and union officials before developing a course schedule. The most important thing is to be flexible.

BUILDING EFFECTIVE RELATIONSHIPS

To build an effective literacy program, you must

- gain the support of management and employees, and
- maintain positive relationships with management, employees, and union representatives.

GAINING MANAGEMENT AND EMPLOYEE SUPPORT

- Balance education and productivity needs.
- Involve management and employees in program development.
- Decide together what needs can be addressed first with the time, money, and resources available.
- Develop a shared vision for the future.

Educators developing workplace literacy programs must confront several initial questions. What are good ways to involve employee leadership in the development of literacy programs? How can education and productivity needs be balanced? Like management, employees and unions have goals. Some of these overlap management goals and some relate to other more general worker concerns. Find out about these goals by interviewing employee leaders and getting their feedback on program plans. Secure cooperation from top leaders as well as plant and department level representatives. And, of course, consult contract rules.

Unions can be a valuable resource. Union members can participate in your program by serving on advisory teams, setting up joint programs, or providing funds. You can also have them recruit students, provide space for classes, and suggest classes. Like company management, unions often have specific needs and goals. Find out what these are. Make sure you always consult with the union about any decisions that are made. When unions are not available, you may have a more difficult time identifying employee leaders. But it is important to do this since programs without employee support tend to fail.

It is difficult to design a program to meet everyone's needs. As a program designer, you have the job of determining which educational needs will be met initially, which later, and which not at all. This is a difficult job when you are sitting in a room with various representatives who have vested interests in different outcomes. For example, human resources may want you to address ESL education needs specifically. Union representatives want to maintain employee job security and want you to address general education needs. The company's training department may want you to address specific technical training for a new production process. Employees may want to learn the general use of computers. You have to decide what needs can be addressed first with the time, money, and resources you have. This involves negotiation, persuasion, and a good deal of explanation about realistic expectations.

It is important to develop a shared vision among the representatives and look for innovative strategies for meeting their needs. For example, you might design a multi-strand program that initially offers computer-based training on new production processes. Later strands would include ESL and general basic education skills assistance. If time and money limit your start-up options, you may have to begin by addressing the most pressing needs first.

Developing a shared vision for the future is important not only for maintaining good relations with various representatives; it also makes a program more effective in the long term. If there is no shared vision among the representatives, it may be best to agree to provide a more general type of program or not have a program at all.

- Successful outcomes and satisfied clients are achieved by reaching jointly agreed upon and reasonable goals.
- Constantly review the program's progress with supervisors, managers, and unions.
- Keep the lines of communication open, if possible through an in-house liaison person.
- Keep accurate records for your program on finance, and learner attendance and progress.

Many workplace classes last only 20 to 30 hours, so it is wise to set up well-defined and limited goals from the beginning. In order to capture and retain the support of employees, management, and union officials, all partners need to see results from your program. Listen to concerns and include them in all the logistical considerations of the program. Develop clear program goals and then make sure the goals are achieved. You should not promise to deliver more than is realistic. Successful outcomes and satisfied clients are achieved by reaching jointly agreed upon and reasonable goals.

Supervisors, managers and unions want to and should feel a part of the positive results of a literacy program. It is a good idea to constantly review progress of employees in general terms with supervisors without referring to individual learners by name. You can also hold recognition ceremonies to reward both employees and supervisors. Before doing this, it is important to determine whether learner privacy is an issue at your workplace.

There are advantages to having a dedicated, fully-trained, in-house person in charge of the program to assure open lines of communication between literacy educators and supervisors. If possible, this person should be in a highly visible office, have rapid access to all supervisors, union representatives, the advisory team, instructors, and involved management, and have access to facilities for electronic mail or other rapid communication. All supervisors and managers who are involved in the literacy program should be made aware of the classes in progress and those planned for the future.

Also, it is important to keep accurate records for your program. You should track how much money is spent and what it was used for, how effective the instruction was (e.g., pre- and post-test scores), and the dates employees are absent and why. You can use these records in later conferences with the advisory team or with management. Plan to check regularly with supervisors and the joint advisory teams to see if the original needs are being addressed and to see if your program is having an impact.

As a literacy program developer, it is important for you to realize that you may be serving in the role of a change advocate or change agent. A change advocate supports the need for change; a change agent plans changes and attempts to implement them. Change agents try to implement and manage change by identifying those that are critical. They analyze each change and design a plan to integrate the change successfully. They must also execute and revise that plan as needed (Dormant, 1986, p. 238). Literacy programs are often bound up with larger changes going on in a company such as changing job descriptions or downsizing, and, as the program designer, you need to be aware of the politics of change.

Other Suggestions for Designing an Effective Program

Other elements of an effective literacy program include

- creating positive relationships with all parties involved,
- being flexible and creative in solving problems, and
- making sure your clients and advisory team are satisfied with the program.

Creating a positive, actively involved relationship with employees, management, and union officials will help maintain support for the program. By meeting regularly with joint advisory teams, you can help make sure your clients are satisfied with the directions and outcomes of the instruction. As a program designer, you should also understand the need for flexibility. Anticipate and plan for problems and find creative solutions. The problems of starting a workplace literacy program are often fairly predictable. These solutions, if planned ahead of time, can be in place before the need arises.

Some of the common problems and solutions include the following:

- Production supervisors have many short-range goals to be met and tension arises when students need to be in class and a "hot order" has to be completed. The solution for this problem revolves around having the supervisors "buy into" the long-range goals of the program and scheduling classes at times when production is most likely to be slower. Instructor flexibility is also a must.
- Scheduling classes should include discussions with and decisions from your advisory committee as to which classes will be taught (or taught first), the number of classes a person can take at a time, and the number of people in each class. Waiting lists and open or closed entry classes should also be discussed.
- Confidentiality is a major concern to some students taking classes. They need to know from the very start that their records will not be shared with management, union, or others. However, management can ask you about the progress of the class as a whole and is entitled to be given this information. The management is also entitled to know if an employee is taking or has taken a particular class.
- Labor/management issues include possible strikes from either unions or other employee organizations. You do not want to ask either side to cross a picket line, and you should not cross that line yourself. The ruined relationships that result can kill a program. Some teachers have continued classes at neutral sites.
- Know the policies and relationships between employees and management so you will know whether you can go out on the floor for information or whether you have to remain in the classroom while others gather information for you.

- Be very clear from the beginning as to whether the program is an employee benefit or a management tool or both. As a benefit, learner goals take top priority. If the program is totally funded by management, the balance leans much more heavily towards work performance. If learners feel deceived about what you are offering, it will seriously injure your program.
- Using the word *literacy* in the title of your program gives the impression of very remedial work. Using a catchy title or logo avoids the problem. (Examples include: "Skills Today for Achievement Tomorrow (STAT)" used by Blue Cross and "The Pepsi Challenge" used by Pepsi.)

CHAPTER SUMMARY

In order to plan a workplace literacy program that is in tune with the needs of the workforce, you should organize an advisory committee to a) help you learn about the job site, b) interview workers, c) identify basic skills that need to be improved, d) determine available resources; and e) help you plan the program. After you analyze education needs, you will be able to design a more effective program.

In designing the program, you should consider what types of instruction to offer and the needs and goals of various groups. Workforces are most often made up of employees with a broad range of skill levels. Non-training solutions should also be considered since they will increase the effectiveness of the program.

Locating funding and resource providers is an important part of planning the program. Funding through multiple sources often creates a stronger program since key groups are directly involved. Getting groups to invest resources is another way of getting them involved. Planning the logistics of the program early can eliminate potential scheduling problems. Consider the company's production schedule and do your best to avoid inconvenience to company or employees.

Gaining support from management and employee representatives is another way to build an effective program. Representatives from both groups should be on your advisory committee. They can help you plan and set up the program, locate resources and funds, and recruit students. As a program manager, you should be aware of issues such as class schedules, confidentiality, labor/management issues, workplace policies, and workplace politics. Effective management of the program on your part can lead to positive relationships among all parties involved.

As you begin actually developing the program, you will look in more detail at analyzing the need for education, determining what types of classes to offer, how to design your curriculum, and how to recruit students. You will learn more about these things in Chapter Three.

CHAPTER THREE

DEVELOPING A WORKPLACE LITERACY PROGRAM

When developing a successful workplace literacy program, it is important to consider what types of performance problems exist, what types of curriculum you will use in your instruction, and how you will recruit students. In this chapter, you will learn how to

- analyze performance problems, job tasks, and literacy-related job skills;
- develop customized curriculum, select off-the-shelf materials, and develop job aids; and
- plan for student recruitment.

The first step involved in developing a workplace literacy program is to find out where the performance problems exist. This is done by performing a job task analysis. The purpose of a job task analysis is to look at the overall picture, examining several jobs, and determine where performance problems are occurring. In some situations, this may already have been done. For example, problems in technical training classes or quality assurance groups may have led to a request for additional education.

After you find out which jobs have performance problems, you can then determine which literacy-related skills are involved in those jobs, and which specific skills are causing difficulty to workers. This literacy task analysis then serves as a guide for helping you design your own customized curriculum. You will also have to decide the best mix of designing your own curriculum and using off-the-shelf materials.

How well you recruit learners can have a considerable influence on the success of your program. There are several factors that can improve the quality of your recruitment. These are providing incentives, using other employees to recruit, maintaining visibility, and including employees in the planning process so the program meets their needs and interests.

CONDUCTING A TASK ANALYSIS

To address the needs of the company and employees;

- analyze jobs to determine the particular tasks that they require;
- locate job or task areas that need improvement; and
- determine if literacy-related job skills need to be improved.

To make sure your program ties in with the needs of the workplace, you will need to become very familiar with the jobs of your target group and determine where instruction needs to be focused. When you analyzed the needs

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of the company (see Chapter Two) you probably found several areas where improvement was needed. Did you decide that education can help the company and employees meet those particular needs? If so, you now have to decide what type of instruction needs to be offered, how it will be done, and to whom it will be available.

To do this, there are two processes that will enable you to examine the areas of need and analyze how your program can help address them. One is to conduct a large-scale job task analysis of a whole company or department. The other is to concentrate on a few jobs where performance problems are known to exist. You may not be able to go through the first of these processes due to limitations of resources or company regulations. However, both are valuable tools for helping you build the foundation of an effective workplace literacy program.

In a full job task analysis, you will need to become familiar with all the jobs of your target group, whether it is the entire company or a small department. This involves examining a group of jobs, and determining and mapping the major tasks for each job. For example, if you performed a job task analysis at an insurance claims department, you would examine each job in the department, determine the major tasks required to perform the job, and map and organize those tasks in a chart. You will rarely be asked to look at the whole company and find all the performance problems that exist within it. Most often, companies will report problems in particular areas, and you will focus on finding the specific performance problems in those areas. If you are unable to perform a full job task analysis, you will, in any case, want to conduct an informal assessment of worker needs by focusing on a few key job tasks. This will allow you to move on to the second process of analysis.

This second process involves looking at specific tasks for each job and determining what literacy skills are required to perform each task successfully. This is called a literacy task analysis. You would first examine information gathered from your job task analysis (whether formal or informal) and determine which tasks require literacy-related skills. Then you determine what types of literacy skills are required. For example, some literacy-related skills required by an insurance claim clerk are asking questions and taking notes from conversation, skimming policy manuals and locating information, reading manuals for new information, and summarizing information back to the client.

- Find out the following
  Which tasks are critical to the job?
  What skills need to be enhanced?
  Are there skills associated with promotion?
  Do jobs require retraining?
- Gather information through interviews with employees, supervisors and managers, observation of workers on the job, and examination of printed materials used by workers.
- Organize your information into a chart.

When performing a job task analysis, you should examine four aspects of the workplace. First, you will want to know which tasks are critical to the job. For example, if a worker's performance in a particular task leads to unsafe conditions, then it is critical that he perform this task correctly. Second, find out if a number of employees make frequent mistakes in a particular task. If so, determine which skills need to be enhanced. Third, find out if there are skills that are associated with promotion. Employers often report that they have reliable workers who demonstrate desirable traits such as a positive attitude, punctuality, and dependability, but who lack the basic skills required for higher level jobs. Fourth, determine whether or not the job requires retraining. Many workers are returning to the classroom to learn highly technical processes or how to operate sophisticated equipment, and they need to learn new academic and basic skills to support this.

Job task analysis includes interviewing various people, observing employees on the job, and gathering job-related print materials. By interviewing employees, managers, supervisors, human resource personnel, and trainers, you can gain a wide range of information about the company and its performance problems. Employees can provide information on specific performance problems such as what types of discrepancies occur between what is policy and what is practiced. For example, if an instruction manual has an incorrect or outdated procedure, employees can identify that procedure and tell you how they perform it correctly. Supervisors and managers can describe performance problems that are occurring and what types of work errors they encounter in their own departments. Human resources personnel can provide information on the educational requirements for particular jobs and whether current employees meet those requirements. Trainers can tell you what types of training programs are already in place so you can avoid duplicating efforts. Information from all these sources will help you better define the focus of your curriculum and build a more credible program.

The information that you gather in interviews with employees, managers, and supervisors will help you choose which jobs to analyze. When selecting jobs and job tasks on which to focus the literacy task analysis, look for areas of agreement among the various groups. For example, if four of five managers report that entry-level quality control technicians have difficulty reading manuals and gauges, calculating decimals, and recording the average, range, and total for the product weights, then the quality control technician would be an appropriate job to analyze.

Observing employees at work is also a valuable way of obtaining information. After getting permission from the appropriate persons, you may be able to shadow employees during a shift and observe them doing their jobs. Plan to ask questions and get a good understanding of what is done in a certain area and how and why it is done. It is a good idea to document your observations, if possible, using a video camera, still camera, or cassette recorder. Or you might bring along a note taker to help you in recording your observations. First make sure that you have the permission of both the employee and employer before doing any of these. In many workplaces, photography will not be possible for reasons of security or competition.

A job task analysis is often done in several steps. First, you gather all the information you have obtained from interviews, notes, and observations. Then you organize the information into a chart format to make it easier to read. The following example shows both of these steps.

EXAMPLE:

Job: Bank Teller

Task: Handling customer requests for bank account information

Step 1 - Gathering Information

The notes you take during an interview with a bank teller might look something like this.

"Talks with customers—says hello, asks questions about their request.

She figures out what information is needed.

Finds out if they are requesting information or if they have a problem.

Takes notes about what the customer is requesting.

Looks up information needed from computer files or brochures.

Delivers information to the customer or helps him solve the problem."

Step 2 - Organizing the Analysis

To help organize your task analysis, draw two columns on a sheet of paper. In the left column, write a brief description of the tasks. In the right column, list the sub tasks of each main task.

TASKS	SUBTASKS
1. Talk with customer.	1.1 Talk with customer.
	1.2 Ask the customer how he can be assisted.
2. Take notes on conversation.	2.1 Recognize important information.
	2.2 Write down key words, phrases, and numbers.
3. Determine what the customer needs.	3.1 Ask the customer questions about what he needs.
	3.2 Determine if he needs information or help with solving a problem.
	3.3 If information is needed, go to the source of information such as the computer files or bank brochures.
	3.4 Gather the information needed.
4. Present information to the customer.	4.1 Present information in oral or written form.
	4.2 Help the customer solve the problem.
	4.3 Suggest follow-up information if necessary.

After conducting the job task analysis, review the information gathered and determine which job tasks are most critical and pressing. To do this, you may need to ask questions of experienced workers or supervisors. Ask questions like the following:

- Is the current training addressing the needs of the workforce?
- Are there changes in job tasks or responsibilities that require more skills?
- Are there enough workers experiencing problems to justify setting up a class?

Find out where the discrepancies, confusion, or problems exist, and which ones can be helped by literacy or basic skills instruction.

After determining which job areas have performance problems:
- decide which tasks are most critical and pressing;
- find out what the specific problems are; and then
- decide if these problems are caused by a need for improved literacy skills.

By performing a literacy task analysis, you will be able to determine what types of literacy skills are needed to perform a job and then design your curriculum based on that information.

A literacy task analysis is a method used to analyze the aspects of job tasks that require reading, writing, computation, and problem solving (Drew & Mikulecky, 1988; Mikulecky, 1985). It is a detailed account of workers' thought processes when they use print materials on the job. The purpose of a literacy task analysis is to identify which performance skills need improvement. For example:

- Are there concerns about safety hazards?
- Are employees making production errors?
- Are large amounts of material being wasted due to improper handling?

By finding out "where the pain" is and what skills are needed to improve the situation, you can better identify what types of instruction are needed. You must also determine how many workers are experiencing problems. If only one out of fifty workers is having problems, large-scale instruction will not be a cost-effective solution.

When you observe workers carrying out a job task, it is important that you obtain a thorough understanding of how the task is done. For example, if workers use information from a form, find out exactly which parts of the form are relevant and how the information is used. Keep asking questions to clarify your understanding and to prevent the workers from glossing over steps because they are very familiar to them. Ask experienced workers or supervisors where they see problems occurring and how frequently, and find out as precisely as you can what skills are involved in those steps of the task. Remember that you will be building curriculum around the skills that workers need to learn, using the job materials now being demonstrated to you.

To help organize your literacy task analysis, use a chart to list a brief description of a task and the literacy skills required to perform that task. An employee may use several literacy-related skills to complete a task. For instance, using the bank teller example of handling customer requests for account information, one task related to that job is being able to determine what the customer needs. Following is part of a literacy task analysis related to the example described previously.

EXAMPLE:

Job: Bank Teller

Task: Determine what the customer needs.

Subtasks	Literacy-Related Skills
3.1 Ask the customer questions about what he needs.	3.1.1 Formulate questions about the request.
3.2 Determine if he needs information or help with solving a problem.	3.2.1 Analyze verbal information from customer's responses to the questions.
3.3 If information is needed, go to the source of information such as the computer files or bank brochures.	3.3.1 Scan information resources such as brochures or computer files.
3.4 Gather the information needed.	3.4.1 Analyze verbal and written information.
	3.4.2 Summarize information.
	3.4.3 Take notes.

Problems may occur with certain subtasks because workers lack the skills necessary to perform them. If, for example, some bank tellers are giving customers incomplete information, this may be due to their inability to scan brochures quickly and efficiently. Knowing this can help focus instruction on the techniques of skimming and scanning.

Building Curriculum From the Literacy Task Analysis

- Select tasks that cause most difficulty and build curriculum around those tasks.
- Collect samples of print materials used by workers and develop curriculum activities from them

During interviews and observations, you should document the tasks involved in doing a particular job. Be sure to collect samples of any literacy materials and discuss their importance and frequency of use. You can then use the most important materials to help you develop your custom-designed curriculum.

There are two types of job-related materials: task oriented and general. Both include many things that the worker, or you, may not think of initially as reading. Examples of *task-oriented* materials are a work order that tells a machine operator which drill to use or a maintenance manual that tells a mechanic how many quarts of oil to put in an engine. On the other hand, *general* job-related materials include items that make workers more confident, knowledgeable, and valuable to a company, but these items are not needed to carry out the job. Examples of general materials include policy manuals, insurance information, and retirement fund information.

After you select the skills that cause the most difficulty, you then design curriculum to help workers improve those skills. Develop lessons and activities using the materials gathered from the job site that relate to the targeted skills. As you identify these sample materials, make copies of them so you can use them to design your own curriculum.

EXAMPLE: The following is one step from the task analysis of the bank teller and some possible lessons that could be used to improve performance of that task.

Literacy Skill Applied	**Possible Lessons**
Summarizes information and takes notes.	To simulate the work environment, use role play situations. Tellers can practice summarizing information and taking notes using the bank's manuals, brochures, and computer system. Practice note-taking techniques based on a customer request using the bank's computer system, manuals, and brochures.

In some cases, you may find that there are few problems in current jobs, but problems are anticipated in the near future when jobs will change as new technology is implemented or technical training classes are required. In such cases, the task analysis should focus on the skills required by these future demands. You may need to coordinate with management or supervisors to have a demonstration of how a certain job would be accomplished in the future.

DEVELOPING CURRICULUM

When developing curriculum, it is important to

- use the task analysis to create custom-designed curriculum that links job skills and learner interests,
- select off-the-shelf materials to supplement your custom-designed curriculum,
- determine an appropriate mix of custom-designed materials and off-the-shelf materials, and

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• use job aids to reinforce the instruction.

Effective workplace literacy curriculum links together current basic skill levels, job requirements, and learner interests. When making decisions about curriculum, you should consider what mix of custom-designed materials and off-the-shelf materials works best.

DESIGNING INSTRUCTIONAL MATERIALS

- Design curriculum and instructional materials using the literacy task analysis and employee interests.
- Integrate instruction for job tasks with the literacy skills needed to perform those tasks.
- Maintain a balance between job-centered and learner-centered instruction.
- Make sure that you teach correct ideas and do not conflict with other training already in place.

Many literacy program administrators recognize the importance of using custom-designed materials. In a survey of 121 workplace literacy program reports from the early 1990s, 52 contained information about curriculum and 50 of those reported some use of custom-designed materials (Mikulecky, Lloyd, Horwitz, Masker, & Siemantel, 1995).

Custom-designed curriculum consists of instructional materials that you develop using the literacy job task analysis and additional materials relevant to employees' home skills or personal interests. This usually involves integrating the instruction for job tasks with the instruction in literacy skills necessary to perform those tasks. Your curriculum is based on the information you have obtained from interviews, observations, job materials you have gathered, and the literacy task analysis.

It is important to maintain a balance between job-centered instruction and learner-centered instruction. By using both types of materials, you will capture the employees' interests and encourage them to practice new skills both on the job and at home. Learners will also see the relevance of the instruction to both their work and personal lives.

EXAMPLE: At a medium-size machining shop with mainly female employees, workers were having trouble following directions in a new machine maintenance manual. The literacy instructor used the manual as a basis for designing lessons. She copied pages of the manual and had the class read and interpret these in a variety of situations. Sometimes they worked in pairs, sharing their understanding of the instructions. At other times, they worked individually, writing their own paraphrases of the manual, which they then shared with the class. After the instructor found out that several of the employees were interested in cooking, she incorporated recipes into the instruction. Since recipes also proceed step by step, they helped teach the same skill—following step-by-step directions. For each exercise, the instructor modeled how to read the directions, and pointed out similarities and differences between the strategies employed in understanding them.

The type of instruction you present must be valid. Carefully analyze the suitability of the materials you create. Ask members of your planning group, trainers, supervisors, and a few of your students to review the materials. It is important to make sure that you teach the correct ideas and do not conflict with other training already in place.

Learners can also help you develop and design the curriculum. By getting their input throughout the planning process, you will be able to produce a more credible and valued curriculum. They can provide direction in helping you define learner interests and how to best incorporate those interests into the curriculum. They can also point out discrepancies that occur between policy handbooks and their job practices.

You may find that the number of skills to be taught is more than your program can handle in one course. Or you may find yourself in the position of not having sufficient time and resources to design all the curriculum you need. This is when it is important to consider how off-the-shelf materials or job aids can help you further your program.

SELECTING OFF-THE-SHELF MATERIALS

- Supplement your customized curriculum with suitable commercial materials.
- Choose materials based on their compatibility with your literacy task analysis, your custom-designed curriculum, and the needs of the workforce.
- Supplementary materials include adult educational materials, vocational texts, and industry publications.

Designing your own instructional materials takes time, energy, and knowledge. Successful workplace literacy programs contain a good deal of customized curriculum, but be careful not to reinvent the wheel. Publishers have realized the extensive market in the fields of adult education and vocational training. There are many excellent materials that you can use in your courses to supplement the curriculum that you design yourself. In addition, many programs have entered copies of teaching materials into the ERIC (Educational Resources Information Center) database. When you have developed your own program, you can assist other workplace educators by sending reports and materials to the ERIC system. There are several different clearinghouses for different aspects of education, and the appropriate one for workplace materials is the Clearinghouse on Adult, Career, and Vocational Education. You can contact this clearinghouse by telephoning 1-800-848-4815.

Supplementary instructional materials may be adult education materials, vocational texts, or training publications. Choose materials based on their compatibility with the literacy task analysis, the custom-designed curriculum, and the needs of the workforce. An adequate blend of custom-designed and published materials will provide your students with a job-specific and comprehensive course.

EXAMPLE: In a literacy program at a large insurance company, several sources of published materials were used. The primary focus of the course was to improve report writing skills. The instructor developed customized curriculum on how to write reports properly and used the company's report writing guidelines. She also used several types of off-the-shelf materials to help improve grammar and writing skills, such as a book that gave instructions on how to write concise paragraphs, an English grammar book, and a dictionary.

There are many places you can find published materials to use in your program. For example, your planning group may be able to help you find some good materials related directly to the industry. You should also talk with professional organizations related to the workplace, and publishers of trade journals and magazines. Libraries, vocational or technical schools, and bookstores are other good sources. You may also check within your state for government agencies, related occupation fields, or private industry groups that can offer guidance.

Curriculum designers, training directors, and publishers of textbooks and educational materials are interested in things that work well. Once you have located and used various materials, you may find it beneficial to communicate with the author or publisher. Let them know how you used it and how it might be further developed. Discuss any suggestions for revisions. You will be enhancing the field of workplace education as well as guiding the development of future materials.

EVALUATING THE SUITABILITY OF OFF-THE-SHELF MATERIALS

You may use published materials as part of the core curriculum, to reinforce instruction, to serve as a resource guide, or to provide enrichment. To determine the suitability of published materials, consider the following things in relation to your own methods and goals:

- intended use of the materials,
- reading level,
- method of instruction,
- amount of coverage of the subject matter, and
- price of the materials.

Some strands of instruction will rely more heavily on off-the-shelf materials, while other strands will lean toward a more customized approach. The needs of your target group and the goals and objectives of your program will help guide decisions about curriculum development.

DEVELOPING JOB AIDS TO FURTHER YOUR INSTRUCTION

- Job aids restructure information to make it more easily understood, so that job performance can improve.
- They simplify job tasks to provide ongoing support after instruction is finished.

- Learners can help develop job aids as part of practicing new skills.

A good solution to consider for simplifying job tasks is to use a job aid. Job aids, like custom-designed curricula, are based on the literacy task analysis. A job aid simply restructures information so it can be more easily understood and more accessible to the workers (Mikulecky, 1990). Job aids are designed to provide information, reinforce instruction, or provide ongoing support for workers after instruction has been completed.

Although the format may vary, all job aids are designed to improve job performance. A job aid may take the format of a flow chart, a checklist, or a list of instructions. It may include prompts or clues, or indicate what type of information is needed to correct a procedure.

EXAMPLE: At a large manufacturing company, employees were being trained to work in self-directed work teams but they were having trouble communicating with each other. After providing instruction in communication skills, the literacy instructor asked the employees to help her make a small job aid listing various communication strategies. This not only reinforced the skills and provided practice, but also served as a reminder of how to handle communication problems after the class had finished.

Job aids can also be a productive part of a workplace literacy curriculum. You can reinforce classroom instruction by utilizing them as part of practice time. If workers are expected to improve their basic skills, they must be allowed sufficient time to practice these skills. Using jobs aids provides much needed practice time. Getting learners to help you develop the job aid also provides expanded practice time. Learners often practice the skill as they help write the job aid. They also provide valuable guidance for deciding on the format—whether it is a laminated card, a form, or a wallet-size checklist.

You may also use job aids to teach employees how to do a job. When a new skill is introduced, use a job aid to simplify the skill so the worker can experience success in the classroom and on the job. They can also be used when there is not sufficient time or funds to teach all the employees.

DEVELOPING A RECRUITMENT PLAN

- Strategies for building an effective recruitment plan include providing incentives for learners, asking supervisors and your advisory committee for help, maintaining visibility within the company, and making sure you are meeting learner interests and needs.

Effective recruiting is essential to a successful literacy program, especially during the first year. More than likely, you will be competing with other training and job activities to recruit students for your program. For this reason, offer the same class at different times during the year so employees will have several opportunities to attend. Heavy work schedules, vacations, or illness may prevent someone from taking a course the first time it is offered.

Recruiting students for your program requires that you reach all employees in your target group. Encourage members of your planning group and other key workplace figures to work with you to recruit students. On-site personnel are more familiar to the workforce than you are, and their involvement will lend credibility to your program. Several recruitment methods have proven successful in workplace literacy programs. These are providing incentives, using other employees to recruit, maintaining visibility, and meeting the needs and interests of the employees.

PROVIDING INCENTIVES

Your job would be easy if all employees signed up for literacy programs because they recognized the need to upgrade their skills. The fact is, incentives play an important role in enticing people to take part in special training. Programs with built-in incentives prove to have better participation than those that do not.

The employer may decide to offer monetary incentives, such as pay for attending classes or a bonus paid at the completion of a course. However, incentives may take other forms:

- attendance fulfills training requirements;
- participants receive special recognition from supervisors;
- students receive certificates in employment folders; or
- course completion offers an increased opportunity for upward transition.

Other incentives that have been successfully employed by workplace literacy programs tend to focus on external awards such as free meals, lottery-type drawings for the people in classes with prizes that include cash, meals, goods, services, and donated gifts. Amenities and support may be provided such as child care at the site or refreshments during class.

While none of these incentives are costly, they send a message of support from employee representatives, union, and management. In addition to these short-term incentives, there are long-term incentives for employees. These include opportunities for them to

- gain enough skills to maintain their current positions,
- gain sufficient skills to earn promotions,
- gain sufficient skills to allow them to seek a new job, and
- see the value of continuing literacy for themselves and for their children.

Employees are generally aware of the potential benefits, but they may need help seeing how these intrinsic benefits apply to them.

EXAMPLE: The administrators at an auto manufacturing company offered a variety of incentives to program participants. Employees attending a technical training strand in statistical process control received overtime pay for attendance. In the case of incompatible class and work schedules, some employees were relieved from their work area to attend class. Employees were not required to work mandatory overtime on the day they had class. All participants in the program received credit toward mandatory training requirements, completion certificates in their personnel folders, and recognition by the company.

USING SUPERVISORS TO RECRUIT

Supervisors of your target group can be helpful in recruiting. Remember that supervisors are the individuals who witness the basic-skills errors being made on the job. They are often the ones who have to correct the errors of their workers. The relationship you have with supervisors is vitally important. They may be able to recommend attendance in a course to certain employees who are having difficulty with particular job tasks. Supervisors can recruit employees who receive low performance ratings to help them raise their level of performance. They often decide issues regarding shift coverage and overtime pay, so it is important to get their buy-in for the program. Their support and input means you will present a program that addresses the real problems and makes the time spent in class valuable.

Be aware of the rights and attitudes of employees concerning recruitment. In some places, recruitment by supervisors may be welcomed by the workforce. However, on other work sites, recruitment by supervisors may be viewed by the workforce as giving special treatment to certain individuals or as violating employee confidentiality about literacy difficulties. Discuss recruitment strategies with managers, union officials, or other decision-makers in the workplace.

BEING VISIBLE

How you communicate within the workplace depends on the atmosphere of the company. In many companies, going to supervisors and employees is very helpful. You meet the people and they are able to get to know you. You can talk with them about actual problems and education needs that they see. The more you are able to act as an ombudsman and encourager with union representatives and supervisors, the more they are likely to share problems, ideas, facilities, and opportunities with you.

However, there are two common problems associated with open recruiting. (a) In some situations, people do not want others to know that they are attending classes. (b) Going in to a hard hat area entails physical danger to yourself and the people working there and may not be possible for insurance reasons. In both of these situations, it is preferable to have advocates on the floor.

If confidentiality and safety are not major issues, it will be useful for you to become visible to employees. Workers notice even slight changes in the work atmosphere. Beginning with your first visit to the work site, engage employees in conversation. Show interest in their jobs and introduce yourself to workers who are group leaders or shift supervisors.

Recognize and strive to recruit the leaders within your target group. These are employees looked up to by other workers, and if they sign up for a class, others may follow. Stress the "buddy system" in your recruitment strategy. Recruit co-workers who enjoy each other's company.

Make yourself visible and available to workers often. Schedule information sessions before a work shift. Display program information in employee lounges or cafeteria settings. Listed below are several other types of communication strategies.

Written or Visual Strategies

- Place announcements in the company newspaper. It is very helpful if the article or announcement can be written by people who have taken the instruction being offered.
- Place fliers with pay checks.
- Have printed explanations of the company's training requirements.
- Use in-house commercial videos, highlighting both the program and the coordinator.

Personal Strategies

- Have a person in the break room or other convenient location at regularly scheduled times to answer questions and talk to workers.
- Communicate directly with supervisors, so that they can share information with their employees. Often supervisors do not know what is available.
- Make sure a person is available regularly to answer questions and to counsel employees about classes.
- Arrange for regular formal and informal "plugs" from union or employee representatives.

EXAMPLE: At a literacy program in a correctional institution, getting to know employees was not always easy because of the nature of their work. To recruit people for each course, the instructor attended roll calls, addressed correctional officers, spoke to department heads at their meetings, partnered with the training officer and visited various work areas, posted flyers and registration forms in break areas, and displayed information in the payroll office.

MEETING THE NEEDS AND INTERESTS OF LEARNERS

Including learners in the planning of instruction can also serve as an incentive. If they feel that the instruction is relevant and their needs are being met, they will be more supportive of your program. It is important that you know what their priorities are before making any decisions about the curriculum.

If the company is targeting critical needs for all of its employees, there may be company-wide testing. This testing should be followed with personal counseling to help employees select what type of education they need. Employees often need help in knowing what their test results mean and in what order courses should be taken.

People need to see "what's in it for me" before they commit their time and energy. For example, a stock room clerk may need to be told that his job is changing. Now he, too, must be able to answer customers' questions since he represents the company. In other cases, employees need to see workplace literacy as the first step to other courses and future job choices.

EXAMPLE: At a manufacturing plant, an interest/needs survey was given to employees to spark their interest in a family literacy program. An area in the employee lounge was used to display materials while a speaker explained the program. In addition, a workshop on family stress was conducted in order to find employees who might be interested in the program.

A recruitment plan should be formulated early in the planning stages. A workplace literacy program without student support and attendance cannot be a success. Be sure to ask members of your advisory team to help you plan your recruitment strategies and where you can get support for special advertising pieces such as a video or brochure.

CHAPTER SUMMARY

To make sure your program matches the needs of the workplace, you will need to analyze the job tasks in the company and focus on the areas where there are performance problems. After determining where the performance problems exist, you will need to find out if those performance problems are due to a need for improved literacy skills. By conducting a literacy task analysis, you can determine what literacy skills are needed to perform a job and find out if employees need to improve certain skills. After collecting information through interviews and observations, you select the skills that cause the most difficulty for workers. Use job-related materials to custom design these parts of your curriculum. Using off-the-shelf materials can save time and resources, so it is important to determine the best mixture of the two types of materials. Developing job aids for employees may also be a good solution for simplifying job tasks and reinforcing instruction.

Effective workplace literacy curricula link together current basic skills levels, job requirements, and employee interests. It is important to maintain a balance between job-centered and learner-centered instruction. By integrating the instruction, you will capture the employees' interests and encourage them to practice new skills outside the workplace.

It is also important to develop a recruitment plan to encourage employees to attend your classes and make your program a success. Issues such as class schedules, employee incentives, supervisor and management support, as well as learner support, all influence what type of recruitment strategies you use. It is important to plan your recruitment strategies early so you can encourage student attendance and support.

As you develop your curriculum, keep in mind that you will also need to evaluate your program with custom-designed measures. Some of the materials gathered in the job task analysis will be the tools you use to evaluate the program. Be sure you match the evaluation to the curriculum you have, and the curriculum to the goals of the program. Chapter Four shows how to develop a program evaluation.

Chapter Four

EVALUATION AND THE LINK TO PRODUCTIVITY

As you are designing the curriculum for your workplace-literacy program, you should also consider methods of evaluation. The purpose of evaluating the program is to assess how you are doing and whether the needs of various stakeholders are being met. Evaluation should reveal the effectiveness of instruction both while it is under way and after the program is completed. This chapter discusses the two types of evaluation that you should perform and describes in detail the methods for carrying out each of them. The first section defines these two types of evaluation—formative and summative—and indicates what each involves. Later sections describe the steps of conducting both types of evaluation. A more detailed discussion with sample measures is available in Mikulecky and Lloyd (1993) and in Mikulecky and Lloyd (1994b).

TYPES OF EVALUATION

Evaluation can be grouped into two general categories, formative and summative. The purpose of formative evaluation is to check the progress of a program while it is still under way so that changes can be made. Summative evaluation, on the other hand, assesses the total effectiveness of the program. Three areas of concern are addressed in summative evaluation: the program's general goals, how much learning took place as a direct result of instruction, and the impact on job productivity.

FORMATIVE EVALUATION

- Formative evaluation checks the progress of a program while it is still under way, so that changes can be made.
- It addresses four areas of concern to the program goals, resources, instructional processes, and impact.
- Issues include Do all stakeholders agree on program goals? Are resources sufficient to achieve goals?

Formative evaluation is conducted in the beginning and middle stages of the program in order to recommend changes needed to keep the program on track. Formative evaluation examines four areas of concern. These are goals, resources, processes, and impact.

Program goals should be shared and understood by all stakeholders, including such groups as teachers, learners, managers, union officials, and so forth. For instance, are learners aware of the stated goals of the program, and do they feel that what they are learning will be relevant to their current or future job responsibilities? Do teachers and managers agree on the program's goals?

Sometimes, misunderstandings between teachers, learners, and management may exist as to what the program is supposed to accomplish. These disagreements need to be clarified and resolved before the program continues beyond a few weeks of instruction.

In addition, formative evaluation should address the program's resources. Are sufficient resources available to meet the stated program goals, and is the program making reasonable progress toward these goals? Resources include class time allocated to achieve goals, appropriate learning materials and space for instruction, and instructors with the training and expertise needed to accomplish goals.

Third, are learning processes such as classroom activities, actual learner practice time, the pace of learning, and so forth, in line with goals and suitable to individual learner needs? For example, a 30-hour class that is 50% discussion with no out-of-class reading is unlikely to achieve much literacy gain, though it might expand employee aspirations, oral skills, and self-confidence.

Finally, what is the perceived impact on learners and their ability to do their jobs? Do groups of stakeholders have good reason to believe that the program is having a positive impact on those it is intended to help? For example, do learners believe that attending classes will increase their chances of advancement within the company, if that is a stated goal?

If problems exist with any of these four areas in a literacy program, formative evaluation will address these problems and recommend changes that could improve chances for success. In addition, it will highlight and report on areas where the program is successful.

EXAMPLE: In a bank, a program was started whose goal was to help tellers use complex math and reading skills to process paperwork on the job. During formative evaluation, interviews revealed that teachers were not using job-related materials to teach these skills, but that they were using off-the-shelf materials to teach only general math skills. The reason they gave for not using a more customized approach was that no preparation time had been allowed before the course was supposed to begin. To solve this problem, the evaluation report recommended that the course be interrupted so that instructors could gather materials and design exercises that related more directly to job tasks. This was not done, but time was allotted for such development before the class was offered a second time.

SUMMATIVE EVALUATION

- Summative evaluation assesses the total effectiveness of the program.
- It examines the program from three main perspectives achievement of program goals, learner gains, and impact on company productivity.

Summative evaluation considers how successful the program has been in meeting its stated goals. Although the majority of the effort involved in conducting a summative evaluation will be expended at the end of the program—or at some major turning point, if the program is ongoing—it is based on assessing learners' literacy abilities both before and after instruction. Thus, assessments should be developed while the curriculum is being designed. Using these as pre- and post-measures will allow results to be compared directly as a means of measuring gains in literacy abilities.

Many programs have goals that go beyond increased literacy skills to achieving changes in literacy practice outside of class, expanding employee educational aspirations, and increasing employees' senses of personal effectiveness with literacy. Interviews and questionnaires conducted before and after instruction can assess impact in these areas.

In addition to measuring gains in literacy ability and life style, summative evaluation also examines the impact the program had on productivity in the workplace. Productivity indicators such as customer complaints, scrap rates, use of suggestion boxes, attendance, and ratings of employees' job performance by supervisors, may show improvement among those who attended classes. So, here too, you will need to gather base-line data on learners before they start class, in order to measure changes produced by the program.

Finally, summative evaluation assesses how well the program fulfilled its stated goals in terms of providing satisfactory service, producing new reusable curriculum materials, and fostering continued learning among employees. Program records such as enrollment and retention rates, samples of custom-designed instructional materials, samples of learners' work, records of employees enrolling in later classes, and any other material connected to the program are gathered and studied. All this information is compiled into a report that documents how successful the program has been in assisting learners and contributing to productivity.

EXAMPLE: In an automotive plant, workers enrolled voluntarily in a program that combined general education (e.g., GED preparation, education in hobbies) with job-related skills instruction. After the first year, when two groups had completed classes that included pre- and post-assessments (e.g., TABE and GED course completions, job task scenarios for job-related instruction), a summative evaluation was conducted. In addition to analyzing pre- and post-test results, evaluators also examined job attendance, use of the suggestion box, and safety violations as measures of productivity. These last two were included because instruction had addressed reading of safety rules and suggestion writing. Also, samples of literacy task analyses and instructional materials were examined as evidence that program goals related to curriculum and instruction were being addressed. A report was then written that documented program successes and recommended changes for future programs.

Conducting a Formative Evaluation

- Formative evaluation uses interviews with each group of stakeholders and classroom observations to learn how the program is progressing.

- The results, conclusions, and recommendations will be submitted to program planners in a written report while the program can still make changes.
- In addition, an external evaluator can provide an unbiased, expert opinion of the program.

INTERVIEWING STAKEHOLDERS

- Interview representatives from each group of stakeholders (e.g., teachers, managers, learners, employee representatives, and supervisors).
- Ask questions about goals, resources, processes, and impact.
- Keep questions open-ended—do not give your own opinion and then seek agreement.
- If a brief response is given, ask for more examples or reasons; continue asking for examples until the interviewee runs out of responses.

Formative interviews should be conducted with representatives from each group of stakeholders including teachers, managers, learners, and others involved in planning and implementation. While it is not usually feasible to talk to all people involved, you should choose representatives who can discuss the program from each group's perspective. For example, you may want to talk to the program manager(s), since there may be only one or two people who hold this position. But rather than trying to reach all learners, you should choose a representative sample, possibly one or two people from each class.

Once you have selected participants to interview, you will formulate questions to ask interviewees. These questions will be based on goals, resources, processes, and impact, as discussed earlier. Typical questions might be, "What do you think are the most important goals of the program? What is your opinion of these goals?" (See Mikulecky & Lloyd, 1994b for more details on conducting a formative evaluation.) Such questions would be asked of all interviewees and their answers compared to look for potential disagreements. For example, if managers think the goal of the program is current job improvement, learners think it is getting a new job, and teachers think it is self-development, there may be some problems if the course is too brief to accomplish all these goals.

It is important not to ask leading questions, but to leave them open-ended to be answered honestly. Offering hints of the kinds of answers you are expecting would be too manipulative. It is acceptable to ask for an opinion of a list of items, but it would not be fair to suggest answers if an interviewee gives a brief response to the initial question. It is also unacceptable to state your own opinion as part of the question. For example, asking someone, "Well, aren't the materials good?" is not acceptable. If someone does give a brief initial response, an appropriate prompt would be to ask his opinion of specific items, without hinting. As an interviewer, it is essential to remain as neutral as possible to avoid influencing the outcome of the evaluation.

EXAMPLE: In the automotive plant mentioned earlier, the program manager, two teachers, and four students (i.e., two from each of two class sessions) were asked whether there were sufficient resources to run the program effectively. Specifically, they were asked about class time, building facilities, and classroom materials. Part of a typical interview with one learner follows:

Interviewer: "What do you think of the books and other materials used in this class?"

Learner: "OK, I guess."

Interviewer: "Can you tell me more?"

Learner: "Some of them are old and I'm not sure if they are out of date or not."

Interviewer: "So you're not sure if you're getting the most up-to-date information?"

Learner: "Yes."

Interviewer: "Is there anything else?"

Learner: "Well, sometimes we have to share workbooks. We can't take them home because there aren't enough for everyone to have a copy."

Interviewer: "So you think it would be helpful to have your own copies of books?"

Learner: "Yes, I could then take notes in my own book."

OBSERVING CLASSROOM ACTIVITIES

- Observe some classes—note the time of each activity and describe events as thoroughly as possible.
- Compare observations with interviews and program goals to determine matches and mismatches between what is actually occurring and stated goals.

Besides interviewing stakeholders, you will also want to observe one or more typical class sessions. As you observe, take notes and describe activities as thoroughly as possible. Be sure to record the time of each activity for later reference.

The results of these observations will be compared with published program goals and interview responses of stakeholders. For example, observations might reveal a difference between what teachers say about the way they spend time in the classroom as compared with what they actually do. More typically, instruction might address some goals while missing others. Reasons for this can be too many goals for a brief course, lack of communication with the teacher about priorities, or lack of resources (e.g., planning time, materials) to accomplish goals.

ANALYZING INTERVIEWS AND OBSERVATIONS

To analyze the information gathered, look for
- areas of agreement and disagreement among stakeholders,
- potential mismatches between goals and resources, and
- inconsistencies between goals and instruction.

Once you have completed interviews and observations, you will analyze the results. Look for areas of agreement and disagreement among the various stakeholders, taking into account the classroom activities you observed. Look also for discrepancies between program goals and either resources to accomplish them or instructional methods. If problems exist, they are usually readily apparent. For example, the manager may believe the program is assisting employees with job-related skills, when in fact, teachers are using only off-the-shelf materials because they have not been given the time necessary to conduct a task analysis before the first class was scheduled to begin.

EXAMPLE: In the automotive plant mentioned previously, a question was asked of managers, teachers, and learners regarding the availability of resources. The manager thought that resources were more than adequate, but teachers wanted easier access to off-the-shelf materials for the GED preparation strand. It was sometimes taking several weeks to process purchase orders and have workbooks delivered, causing delays for learners who wanted to prepare for the upcoming test. Classroom observations confirmed that these learners were being forced to share one workbook among several participants, and they could not take materials home for additional practice. The evaluator discerned that procurement of materials was indeed a problem about which managers were unaware, and that materials would have to be made available more quickly so that learners would be adequately prepared for the GED test. Such a finding in the evaluation provided the political leverage teachers needed to expedite their requests.

In this example, interviews and observations revealed differing perceptions among the various stakeholders.

Reporting the Results of Formative Evaluation

- Prepare a detailed progress report, highlighting strengths and limitations, and making recommendations.
- Have the report reviewed and then distribute it to the planning group in advance.
- Meet with the planning group to present the report—be prepared to answer questions and discuss implementing recommendations.

After analyzing the information gathered during interviews, you will want to report your findings and recommendations to your planning group. Prepare a clear and detailed progress report, highlighting strengths and limitations of the program. The findings should be discussed relative to program goals and the progress made so far toward reaching them. Include a section containing conclusions and recommendations to ensure that the program stays on track. You might also want to include a small appendix containing samples of work completed by learners. As you describe the findings in the report, be certain not to refer to specific individuals. It is important to gain the trust of stakeholders by maintaining confidentiality.

Once the report is written, have another committee member or teacher review it for errors, misunderstandings, or other problems. Distribute the report to the planning group and schedule a meeting to discuss it. By distributing the report in advance, you will avoid problems such as revealing potentially negative information for the first time in front of the entire group. At the meeting, organize a brief presentation of the results, conclusions, and recommendations. Be prepared to answer questions and discuss how to implement recommended changes.

EXAMPLE: In a literacy program at a large insurance company, the formative report was written by the program manager and reviewed by another instructor. It was distributed to the company's training committee, and a meeting was called to discuss it. The evaluator gave a brief presentation of the results, highlighting the program's strengths and problems. Strengths included starting the first class on schedule and maintaining a high enrollment due to advance publicity. One problem was instructors' difficulty in obtaining materials and supplies in a timely manner. Once the purchasing manager was made aware of this problem, she arranged with the purchasing department to speed up processing of purchase orders for the program.

Working With an External Evaluator

Besides conducting an internal evaluation, it is advisable to seek the professional advice of an outside evaluator. This expert can provide participants with an independent, unbiased look at the program and recommend changes that will assist the program in achieving its stated goals. In addition, he or she can monitor the internal evaluation or provide confirmation of results.

Conducting a formative evaluation will enable the program to remain focused on its goals. By interviewing a representative sample of stakeholders, discrepancies among the opinions of each group can be uncovered and resolved promptly.

CONDUCTING A SUMMATIVE EVALUATION

- Summative evaluation documents the program's success in achieving its goals.
- Goals may include attaining gains in literacy ability, improving job productivity and attitudes, expanding learners' educational goals, and increasing involvement in literacy activities at home.
- Pre- and post-test results and other information gathered as part of summative evaluation will be used to write the Summative Evaluation Report.

EXAMINING ACHIEVEMENT OF PROGRAM GOALS

The planning group should

- review and analyze program goals;
- examine program records, such as enrollment and retention rates, samples of custom-designed instructional materials, and samples of learners' work; and
- discuss how well goals were achieved.

To determine how well the program achieved its stated goals, each goal should be reviewed and analyzed by the program planning group. Items such as relevant pre- and post-test results, meeting minutes, class materials, samples of classroom work, and other relevant materials should be gathered as evidence that goals were achieved. Informal evidence such as quotes from supervisors and written comments by course participants can also be included.

EXAMPLE: In a food manufacturing plant, the planning committee's goals were reviewed by the group as part of summative evaluation. Minutes were taken at the meeting, and these were developed into a section in the final report that assessed goal achievement, going through the list of stated goals item by item. For example, one goal was to interview each worker individually to discuss his or her educational needs. Throughout the program, records were kept of interviews, and a table showing demographic data about the group of interviewees was included in the report to demonstrate that this goal was achieved satisfactorily.

- Develop learner assessments as curriculum is being designed.
- The assessments should be linked to the learning objectives of the class and be relevant to both teaching and jobs.
- To allow results to be compared directly for evaluation purposes, administer the same assessments before and after a course.
- If a standardized test is used, it should be one that uses realistic tasks relevant to the job and life skills included in instruction.

As curriculum is being designed, you should also develop assessments to use as pre-measures of learner ability prior to instruction, and as post-measures to determine the extent of gains as a result of instruction. The assessments should reflect as closely as possible the objectives of the curriculum being taught, and be relevant to both teaching and jobs. (See Mikulecky & Lloyd, 1994a for examples of possible measures.) So that results can be directly compared later, you will administer the same assessment for both the pre- and post-tests. Feedback on answers should not be given to learners, or the use of the same measures as a post-test will be invalidated. When administering assessments, it is important to explain to learners that these are being used to measure the program's achievements and not as an evaluation of learners for the purpose of grading them. After course completion, the assessments can be scored and the results recorded for later analysis.

EXAMPLE: A course was developed that taught percentages as they related to efficiency reports for production, in the food manufacturing plant described above. Objectives included learning to read tables and to perform various calculations involving percentages and machine efficiencies. Using actual job materials, an assessment was developed that measured these skills. It was administered before and after instruction so that results could be compared and analyzed to assess the extent of gains in learner ability. Average scores for the whole class were compared and gains were noted in each of the skills addressed by the instruction.

Standardized tests such as the Test of Applied Literacy Skills (TALS) and the CASAS Life Skills Assessment can sometimes be used as part of summative evaluation. Those measures are most effective when curriculum matches the types of life skills materials and tasks used on these measures. Sometimes only a single subtest is needed (e.g., document or quantitative). As with the custom-designed measures discussed above, standardized tests should be administered as pre- and post-assessments so that results can be compared directly. The TALS and CASAS are sometimes appropriate for workplace education because each uses realistic tasks (e.g., adding up a bank deposit slip, reading a table). In addition, these assessments do not assign a grade level to each learner as is done with more general skills tests, such as the Test of Adult Basic Education

(TABE). (See Chapter One for a more detailed discussion of TALS and CASAS.)

EXAMPLE: In an auto manufacturing plant, the TALS was administered to all workers prior to the start of a class and again after each person had completed 20 hours of instruction. The average scores on each of the three sections (i.e., prose, document, and quantitative) were analyzed to look for gains in learner ability. The curriculum addressed a wide range of functional literacy tasks from home and the workplace. Some improvement in scores for the whole group demonstrated that literacy skills in these three areas had increased.

USING COMPANY RECORDS

- Company records are a good method of assessing the program's impact on productivity.
- Use records that will allow you to gather information on individual employees (e.g., customer complaints, attendance, enrollment in later courses).
- Collect data for a time period before a class and after at least 20–30 hours of instruction. If possible, compare learners with a control group who did not participate in the class.
- If these records show an improvement in the bottom line, they can be used to justify continued financial support.

To assess the impact of the program on productivity, examine company records (e.g., attendance, safety, applying for promotions, use of suggestion boxes, error or scrap rates, customer complaints, quality assurance group participation). Although the results will be analyzed for the group of learners, you will need to gather information on the individuals in class to get an accurate representation of any gains in productivity. The items you choose will depend on what is available in the company and how records are organized. For example, in jobs that involve customer service, records might be kept of customer complaints against each employee. Perhaps records are kept of the time required to complete paperwork, for jobs that require filling out many forms. Attendance records are another source of productivity that may show improvement as a result of attending classes.

It may be difficult to find records that are organized by individuals, but keep searching. If you are trying to obtain continued funding, company records can be an excellent indicator of the program's success at improving productivity. Programs that can demonstrate an improvement in the company's bottom line are more likely to receive continued support.

To get around the problem of requiring individual records for each learner, it might be possible to teach all the members of a particular department or team at one time. Team or department records could then be examined. For example, if team training is the major new factor between pre- and post-class records, the group's gains in productivity can be attributed to the instruction they all received.

As with other measures, you should collect data on program participants for a time period before the program and after a significant amount of instructional time (e.g., at least 20–30 hours). This data can be analyzed for the group of learners to look for improvements in productivity. It may also be useful to compare people who attended class with a control group of the same size who did not, due to scheduling problems or limits on enrollment, as a way to discover whether participation in the class improved the productivity of learners when compared to the general worker population.

EXAMPLE: In a program for correctional officers at a women's prison, attendance records were examined for those in a report writing class and for a control group. Periods of two months before and after the class were selected to allow a significant number of absences to accumulate. Because the pre-class period of attendance was in the fall and the post-class period was in winter, attendance fell for both groups. However, the attendance of the control group fell significantly more than that of the group in class. Thus, the use of the control group could demonstrate the positive impact of the report writing class on attendance, whereas without it the impact would have appeared to be negative.

DEVELOPING SUPERVISOR RATINGS

- Supervisor or team leader ratings of employees' job performance are a series of anchored rating scales that are custom-designed to suit your company.
- The supervisors or team leaders who will be making the ratings can assist you in developing the rating scales of job performance (e.g., completing paperwork, working in teams).
- Anchored rating scales help to ensure that pre- and post-ratings are made consistently to allow valid comparisons.

An additional measure of job productivity is the development and implementation of job performance ratings of employees attending the program. These ratings are a series of anchored rating scales that are custom-designed to suit your particular workplace. As is the case with company records, the ratings will be used before and after instruction to measure the program's impact on job productivity. Supervisors and possibly key employees will assist you in developing ratings on various aspects of job performance, including both specific, job-related behaviors and communication indicators related to literacy and basic skills. For example, job-related behaviors might include reading measurements and setting up equipment, following safety rules or completing paperwork. Communication indicators might include behaviors such as how well employees communicate as members of a team, and how often they offer suggestions at team meetings.

It is important to involve the supervisors who will be doing the rating in the development of the scales. If supervisors feel they have contributed to the rating scales, it is more likely that they will take the rating process seriously, so that you can obtain valid evidence that instruction has made a difference to job-related behaviors.

Another factor to consider as you design rating scales is how many supervisors from different departments will be using the scales to rate employees. When the ratings are scored and the results analyzed, they will be reported for the entire group in instruction. The larger the number of employees rated, the more accurate will be the analysis. Thus, it is not efficient to design separate rating scales for small departments or teams. Rather, the ratings should cover a broad range of behaviors that encompass several jobs. For example, you might develop a rating scale for the specific communication skills used by self-directed work teams and then examine how these skills affected company production.

DESIGNING THE RATINGS IS A FOUR-STEP PROCESS.

Step One: Ask supervisors or team leaders to describe in detail how workers use information on the job. Encourage them to think of specific individuals. For example, they might say that a worker

- uses quality monitoring information,
- completes paperwork accurately,
- has information and suggestions to contribute at team meetings, and
- sets up equipment accurately and checks settings.

From this list, you will identify areas that can be developed into ratings.

Step Two: For each of the identified areas, ask supervisors or team leaders to think of behaviors that characterize top, bottom, and average employees:

- first, describe the behavior of top performers;
- then, describe the behavior of bottom performers; and
- last, describe average performers.

You will then use these behaviors as descriptions for the anchored ratings. The scale will range from 1 to 10, with 10 being the highest possible rating. The description of top performers would fall at about 8 or higher on the scale; the average description would fall at about 5, and the bottom description would rank at about 2 on the scale. For example, in relation to paperwork, supervisors might agree on the following descriptions:

Top: completes all job-related paperwork accurately (rating 8);

Bottom: intimidated by job-related paperwork, and avoids it or does it poorly (rating 2);

Average: does job-related paperwork with some mistakes (rating 5).

Step Three: Once the descriptions are completed, work with supervisors to develop initial categories and labels for the rating scales. For example, categories might include paperwork, problem solving, safety, responsibility, communication, and so forth.

Step Four: Draft a rating scale and submit it to supervisors for comments and revisions. Sometimes during revision, complex categories may split to become two separate scales. An example of two categories from supervisor ratings appears below.

EXAMPLE:

Employee Assessment–Overall Rating

Please rate each employee on a scale of 1–10 for each aspect below.

- An average employee would be rated 5.
- A top employee would be rated 8 or higher.
- A bottom employee would be rated 2 or lower.

EMPLOYEE ____________________ DATE __________

RATER ____________________

PROBLEM SOLVING

Bottom	Average	Top
calls supervisor on minor details or continues to work when equipment is faulty	makes minor adjustments, offers solutions to problems and calls supervisor only when necessary	can analyze job situations, make suggestions and solutions which implement change

1 2 3 4 5 6 7 8 9 10

MACHINE SETTING

Bottom	Average	Top
unable to set machines correctly	usually sets machines correctly, but doesn't always check settings	sets machines correctly and checks settings thoroughly

1 2 3 4 5 6 7 8 9 10

- The results of all pre- and post-assessments should be analyzed to look for learner gains.
- Compare average scores for the group of learners both for each item in the assessments and for the total scores in sections of similar items.

The results of all pre- and post-assessments (classroom assessments, company records, supervisor/team leader ratings, etc.) should be analyzed to determine the extent of learner gains. After all tests are scored and the scores recorded, compute the average score for the group of learners. Compare the average scores for each item in the assessments and also compare the total scores in sections of similar items. If your aim in conducting a summative evaluation is to obtain continued funding, you may decide to compare scores using a statistical test of significance. If this is so, you may need to consult a statistics textbook, the manual for a software package, or an expert in statistical analysis. The average scores (or the statistical analysis) will be used to describe the extent of learner gains in the Summative Evaluation Report.

EXAMPLE: In a program for bank tellers, a two-week intensive class in using tables (e.g., tables of compound interest rates) was developed and implemented. The same assessment was administered before and immediately after the course. The average scores were compared and an improvement was shown in the ability to use tables to look up interest rates. This gain in ability for the group was discussed in the summative report.

WRITING THE SUMMATIVE EVALUATION REPORT

The Summative Evaluation Report will discuss

- attainment of program goals,
- measures of learner achievement (i.e., pre- and post-assessments), and
- increases in job productivity (i.e., company records and employee ratings).

The report should

- explain the goals and learner achievements assessed;
- describe the methods of assessment;
- explain the results, highlighting the extent of learner gains; and
- draw conclusions about the success of the program and recommend changes for the future.

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The purpose of the Summative Evaluation Report is to show what the program has achieved. This includes attainment of program goals, learner gains in literacy ability, and increases in job productivity.

In the area of attainment of program goals, briefly explain each goal and its intent. Describe how the goal was attained, using tables as supporting evidence. If the goal was not achieved to the desired level, explain why. For example, in a program in which employee participation is voluntary, there may be a stated goal that all employees would be interviewed to determine their interests in education. A table indicating how many employees were interviewed, grouped by department, would be an efficient means of describing how effectively this goal was achieved.

EXAMPLE: In the food manufacturing plant described earlier, a goal of interviewing all hourly workers to determine their interests was agreed upon by the union and management. The goal was achieved with the exception of a few employees (9 out of 130), including a few who refused to be interviewed and several who left the company before interviews could be scheduled. As supporting evidence, a table was developed showing how many employees from each department were interviewed including a breakdown of their interests in education. To avoid revealing the identity of any individuals, employees who refused to be interviewed were not mentioned directly.

Second, measures of learner achievement should be explained and the results presented. For assessments that were developed for specific courses, briefly describe the course, its objectives, and the corresponding assessments. Give one or two examples of questions that were asked. Explain the results for the group of learners, highlighting any gains in ability. Again, use tables to present results for the group of learners.

EXAMPLE: In the food manufacturing plant, a brief course on reading piping diagrams was developed and implemented. Scores on the pre- and post-assessments showed an improvement in the ability to understand these diagrams and use them on the job. The r

report stated:

A two-part short course on reading piping diagrams was given for all employees at each shift meeting. The goal of the course was to enhance their understanding of piping diagrams which they were required to read on the job. A brief exercise was given before and after each class session to determine how much was learned. The exercise consisted of a series of piping diagrams. Employees were asked to mark the diagram to indicate that they understood how to read it. When the scores were compared, employees from all three shifts showed an average increase of 12–14% in the ability to read the diagrams.

Next, discuss the program's impact on job productivity. Explain the types of records that were examined and the types of job behaviors that were rated by supervisors. For example, perhaps data on customer complaints about individual employees was collected. Explain why this type of record was chosen and present the results for the group of learners. Finally, give your conclusions about the success of the program including recommendations for the future.

Prepare a draft of the report for the planning committee, and make any revisions as necessary. You may also be asked to prepare a presentation of the report, as you did for the formative report. Be prepared to discuss the findings and your conclusions and answer questions for the group.

CHAPTER SUMMARY

Evaluation should measure the success of the program and whether the needs of the various stakeholders are being met. A plan for evaluating the program including assessment instruments should be developed as the curriculum is designed. There are two types of evaluation, formative and summative. Formative evaluation checks the progress of the program while it is still under way, so that changes can be made. Summative evaluation assesses the total effectiveness of the program, including how successful it is in meeting stated goals, in assisting learners through instruction, and in improving job productivity. It uses assessments as pre- and post-measures of achievement. Summative evaluation also looks at company records (e.g., attendance, customer complaints) to assess the impact on job productivity.

To conduct a formative evaluation, representatives from each group of stakeholders are interviewed to determine the extent of agreement or disagreement in the four areas of goals, resources, processes and impact. In addition, several classes are observed and observations are compared to interview results. A draft report is written and submitted to one or two individuals for review before being distributed to all stakeholders. Discussion of the results and conclusions should help the planning committee to make appropriate changes to keep the program on track.

Summative evaluation is carried out by examining program goals, measuring learner achievement through custom-designed assessments and standardized tests, and looking at productivity indicators (e.g., supervisor ratings and company records). Each of these measures is scored and the average scores for the group of learners is calculated. The results are then compiled in the Summative Evaluation Report. The report discusses achievement of program goals, learner achievement, and job productivity. The report draws conclusions about the overall success of the program and recommends changes for the future.

IMPLICATIONS AND CONCLUSIONS

In an increasingly global economy, the demands on workplaces to serve customers and compete on a world level are growing all the time. As businesses face these challenges, literacy demands also continue to expand. If workplace literacy programs are to be effective in meeting these demands, they must serve the literacy needs of both employees and businesses.

Two factors that are key to a program's success are obtaining the buy-in of stakeholders and developing multiple strands. To establish a successful workplace literacy program, it is essential to obtain the buy-in of all stakeholders. Goals must be understood and agreed upon by management, union, instructors, learners, and anyone else who will be involved with the program.

Besides obtaining the buy-in of stakeholders, the program should work towards providing multiple strands of instruction that will address both learners' needs and the demands of jobs. Some strands can be custom-designed to solve job-related skill problems. Additional strands can then be developed that provide for the long-term needs of learners. Workers could enroll in a program strand that addresses low-level skills, then advance to a job-related skills course or possibly a GED preparation course, and finally, enroll in technical courses at a local community college. Thus, an effective program can be developed that will have an impact on the organization's bottom line and also assist learners with personal goals such as obtaining the GED certificate or advancing to higher paying jobs.

Some program strands will use off-the-shelf materials, but others will be custom-designed to address learner needs and job-related skills. The materials you custom-design will be based on a literacy task analysis of key job areas, so that instruction will relate directly to performance difficulties. Literacy task analysis involves interviewing and observing workers in the selected jobs, breaking down jobs into tasks and subtasks, and analyzing the literacy-related skills involved. The literacy task analysis along with the materials workers use on the job will become the basis for teaching these literacy-related job skills. In addition to custom-designing parts of the curriculum, you will use some off-the-shelf materials and some instruction that considers learners' interests (e.g., completing insurance claim forms, reading to children, or job advancement). An effective workplace literacy curriculum links together current basic skill levels, job requirements, and learner interests.

A key element of program planning is evaluation. Formative evaluation can provide valuable information about how things are going and point out areas of concern that can be addressed while the program is still in progress. Summative evaluation can establish accountability for the program, providing evidence for continued funding if necessary. This type of evaluation examines the achievement of program goals. It is based on assessments relevant to the curriculum that measure learner gains, and includes the achievement of instructional objectives and increased job productivity.

The issue of workplace literacy presents many complex challenges and problems. You need to be able to operate flexibly with a variety of stakeholders, some of whom may not clearly understand just what a workplace literacy program can and cannot do. This handbook offers solutions to these concerns and provides practical suggestions for establishing a program that is both achievable and likely to produce positive results. You will hopefully find it useful as a general guide to building a successful program. Take up the challenge and enjoy your successes.

FURTHER RESOURCES

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1988). *Workplace basics: The skills employers want.* Alexandria, VA: American Society for Training and Development.

This 35-page booklet describes the nature of workplace basic skill demands and outlines the process of establishing a custom-designed program. It is available from American Society for Training and Development, 1630 Duke Street, Box 1443, Alexandria, VA 22313.

Drew, R. A., & Mikulecky, L. J. (1988). *How to gather and develop job specific literacy materials for basic skills instruction.* Bloomington, IN: Office of Education and Training Resources, School of Education, Indiana University. (ERIC Document Reproduction Service No. ED 297 160)

This 70-page guide describes in detail how to conduct a task analysis, and includes examples of task interview forms and how to use workplace print materials in teaching. It is available from Vocational Education Services, 840 State Road 46 Bypass, Indiana University, Bloomington, IN 47405.

Henard, D., Lloyd, P., & Mikulecky, L. (1992). *A guidebook for developing workplace literacy programs.* Indianapolis, IN: Office of Workforce Development. (ERIC Document Reproduction Service No. ED 348 580)

This 120-page guide leads the reader through the full process of establishing a workplace program, from setting up a planning group to evaluating the results. It includes illustrative examples and anecdotes from the State of Indiana Model workplace program, and is available free from the Office of Workforce Development, Indiana Government Center, Indianapolis, IN 46204-2277.

Mikulecky, L., & Lloyd, P. (1993). *Evaluating the impact of workplace literacy programs* (Tech. Rep. No. TR93-02). Philadelphia: University of Pennsylvania, National Center on Adult Literacy. (ERIC Document Reproduction Service No. ED 348 579)

This 170 page book describes a new model for evaluating workplace programs and includes detailed examples of assessment measures, as well as the background to the development and implementation of the model. It is available, in either hard copy or electronically, from the National Center on Adult Literacy, University of Pennsylvania, 3910 Chestnut Street, Philadelphia, PA 19104-3111.

Mikulecky, L., & Lloyd, P. (1994a). *Handbook of ideas for evaluating workplace literacy programs.* Bloomington, IN: Indiana University School of Education. (ERIC Document Reproduction Service No. ED 375 264)

This 50-page handbook provides a menu of techniques for evaluating workplace literacy programs and includes detailed examples of assessment measures, how to develop and conduct them, and how to assess the results.

Mikulecky, L., & Lloyd, P. (1994b). *Indiana's evaluation model for adult basic education programs: A handbook.* Bloomington, IN: Indiana University School of Education. (ERIC Document Reproduction Service No. ED 375 265)

This 350-page handbook provides a series of workshops on formative and summative techniques of evaluation. It includes full details of the evaluation measures used in the Indiana model, how to conduct them, how to assess the results, and how to write formative and summative reports.

Mikulecky, L., et al. (1992). *Developing Workplace Literacy Programs.* (A set of five brochures.) Philadelphia: University of Pennsylvania, National Center on Adult Literacy. (ERIC Document Reproduction Service No. ED 348 578)

This series of five brochures outlines the key issues involved in setting up a workplace program: Gaining Management Support, Working with Management and Unions, Discussing Training Needs, Recruiting Students, and Planning Ahead.

Philippi, J. W. (1991). *Literacy at work: The workbook for program directors.* New York: Simon & Schuster.

This 300-page guide describes in detail how to set up a workplace program including task analysis and custom-designing. It is available, for $200, from Simon & Schuster (1-800-223-2336).

Taylor, M., & Lewe, G. (1990). *Literacy task analysis: A how-to manual for workplace trainers.* Ottawa, Ontario: Algonquin College, Adult Basic Education Department. (ERIC Document Reproduction Service No. ED 337 580)

This 170-page manual describes in great detail how to carry out a task analysis, with samples of forms to use, plus advice on developing training from the analysis. It is available from Glenda Lewe, Suite 2301, 530 Laurier Avenue West, Ottawa, Ontario, K1R 7T1.

Taylor, M. C., Lewe, G. R., & Draper, J. A. (Eds.) (1991). *Basic skills for the workplace.* Toronto, Ontario: Culture Concepts, Inc.

This 500-page book contains chapters on the demand for workplace programs, on how to assess worker needs, conduct a task analysis and design curriculum, on example case studies, and on teaching methods and evaluation. It is available from Culture Concepts, Inc, 5 Darlingbrook Crescent, Toronto, Ontario, M9A 3H4.

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APPENDIX

This appendix contains a set of overheads that provide a broad outline summary of each chapter. These are intended to serve as teaching aids so that the guide can be presented as a series of workshops for staff development. This could be done chapter by chapter or section by section, depending on the time available and the needs of program staff.

Current Practices in Workplace Literacy Programs

What we know about workplace literacy programs:

- There are several different workplace literacy problems which call for different sorts of solutions.
- Improvement takes a significant amount of learner practice time.
- Transfer of learning to new applications is severely limited.
- Significant learning loss occurs within a few weeks if skills are not practiced.

Labor Market Trends

- A shift in employment from relatively low-skilled jobs in manufacturing to higher-skilled jobs in the service sector.
- A trend toward more efficient "high-performance" workplaces.
- An increase in the use of literacy in workplaces.
- An increase in temporary and part-time work.
- A shortfall in the level of skills workers bring to the job.
- An increase in the number of workers with little ability to speak and understand English.

Labor Market Trends (continued)

The Shift from Manufacturing to the Service Sector

- Since 1965, the United States has experienced a shift in employment from manufacturing to service sector jobs:

	1965	1993
manufacturing	29.7%	16.3%
service sector	63.9%	79.0%

- In the past, it was possible to earn more in manufacturing jobs that demanded less skill.
- Many workers find that they must now have higher literacy skills to get jobs that pay less.
- This can have serious motivational consequences for those workers, which must be addressed by workplace educators.

The Growth in High-Performance Workplaces

- Increasing numbers of businesses are adopting high-performance techniques, such as quality assurance teams and greater use of technology.
- High performance workplaces have greater demand for higher-skilled workers.
- Fewer jobs are available but with more responsibility.
- Education should focus on skills that will help workers cope with additional responsibilities.

Labor Market Trends (continued)

Increased Use of Literacy in the Workplace

- Workplaces use a combination of
  - prose literacy,
  - document literacy, and
  - quantitative literacy.
- Different skills are often used together.
- Instruction should use realistic simulations to provide a link to the way skills are used on the job.

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Labor Market Trends (continued)

Increase in Temporary and Part-time Work

- Due to the ever-increasing costs of long-term employment commitments (e.g., benefits), employers are less likely to invest in permanent, full-time employees.
- Individual workers will have more major job changes over their lifetimes.
- Temporary workers face higher and more varied literacy requirements as they move from job to job.
- They will require education in flexible skills, such as using resources to solve problems and answer questions on the job.

Worker Populations

Low Levels of Worker Skills

- The National Adult Literacy Survey (NALS) shows that one half to three fourths of workers in certain job categories perform at the lower two levels of the survey.

  Categories include:

  - transportation
  - service
  - farming
  - laborer

- Job literacy requirements are increasingly at Level 3 or above.
- Workplace instruction should focus on these more demanding job tasks and build in practice of the necessary skills.
- Opportunities should be provided for long-term education for learners at the lowest levels if improvement is expected.

Worker Populations (continued)

Workers With Little English

- Workers with little English are
  - over-represented in lower skilled jobs;
  - less likely to be provided with education from employers; and
  - unemployed more often and have greater needs for education due to turnover.
- Such workers do not all have the same need for instruction in reading and writing, listening and speaking.
- Workers from other cultures may need help in making the shift to American workplace behaviors, attitudes, and expectations.
- Workers with little English are likely to learn more quickly if they are taught in the context of the job and outside interests.

Characteristics of Effective Programs

Multi-Strand Programs

- Multi-strand programs should provide for diverse populations on a long-term basis.
- They should also address the needs of low-level learners by providing a sequence of learning experiences from basic to more advanced instruction.
- A multi-strand program can expand from small beginnings to meet the needs of all workers.

Characteristics of Effective Programs (continued)

Involvement of Major Stakeholders

- The active involvement of major stakeholders is important to the success of the program.
- These stakeholders include
  - management,
  - employee organizations,
  - instructors, and
  - learners.
- A good way to achieve this involvement is to form an advisory committee made up of representatives from the key groups in the workplace.
- Involvement in the planning stages increases the likelihood that stakeholders will buy in to the program.

Characteristics of Effective Programs (continued)

Custom-Designed Curriculum

Custom-designed curriculum:

- takes learner interests into account;
- is based on analysis of job tasks and skills; and
- uses materials from workers' jobs.

Characteristics of Effective Workplace Literacy Programs

- Multi-strand programs are an effective way to meet the demands of the diverse populations within a workplace.
- Custom-designed materials integrate basic skills instruction with workplace instruction.
- Forming an advisory committee involves major stakeholders in the planning process.
- Planning for long-term educational goals allows workers—and the program—to grow.

Needs Analysis

- "Where is the pain?"—

  what problems are causing real concern for the employees and company.
- Gather information through interviews and surveys, and by observing daily operations in the workplace.
- Determine which areas of company performance need improvement and find out the differences between where the company and the workers are and where they want or need to be.
- Define which problems are most pressing and determine whether they can be solved through education.

Designing a Workplace Literacy Program

- Address the needs of both the employees and the company.
- Create a balance of workplace demands and learner interests.
- Offer multi-strand programs to meet the needs of various workplace groups.
- Involve workers in developing and recruiting for your program.

Addressing the Needs of Various Groups

- Multiple program strands are needed to address multiple problems.
- Improvement takes significant learner practice time, and varies greatly depending on the learners and the material.
- For example, learners can be
  - high school graduates,
  - high school non-graduates,
  - part-time employees,
  - low-level literates, or
  - English as a second language (ESL) students.

Making Use of Non-Training Solutions

- Non-training solutions include:
  - providing job aids,
  - redesigning forms, and
  - rewriting instructions.
- But be careful—employers will not always be open to these types of changes.
- Non-training solutions help increase the effectiveness of your program and help employees perform their jobs better.
- Consider the cost of developing and providing non-training solutions and the alternatives that are available.

Resources and Logistics

- Funding sources include state and federal grants, partnerships with libraries and colleges, workplace unions and management.
- Program teachers are a crucial element and may need help with using job-related curriculum and becoming sensitive to the workplace culture. Above all, they must be flexible.
- Look for ways to share resources with unions, companies, and training departments.
- Discuss the scheduling of classes around the company's activities to achieve maximum cooperation.

Resources and Logistics (continued)

Finding Funding Sources

These include:

- state level grants
- federal literacy grants
- unions
- partnerships with local libraries, colleges, and volunteer organizations

Be aware that...

- outside funds may need 100% employer match,
- federal funding is usually seed money to start programs, and
- there may be a delay in obtaining funds.

Staff Development

- Program teachers are vitally important—a program depends on how teachers interact with learners.
- Teachers may need help with using job-related curriculum, particularly if they come from ABE or school backgrounds.
- Teachers need to learn as well as teach—sharing responsibility with workers who are content experts on their jobs.
- Teachers need to be sensitive to the workplace culture and adapt instruction to workers' immediate needs.

Above all, teachers must be flexible.

Resources and Logistics (continued)

Allocating Your Resources

Resources include:

- facilities
- funds
- supplies
- storage space
- services such as advertising
- relationships with officials

Some tips to maximize resources:

- Establish relationships with other departments and unions to share resources
- Use loaned resources
- Plan the logistics of your program early—schedule and location of classes, storage space, location of office
- Ask learners to help advertise the program

Resources and Logistics (continued)

Planning Program Schedules

- Class times must be as convenient as possible for everyone without interfering with business.
- Schedule classes before and after shifts.
- Develop take-home lessons for learners.
- Use computer-guided instruction.
- Start courses when the company has a slower production schedule.

Be flexible—work with supervisors, managers, and employees to find out what is most convenient.

Gaining Management and Employee Support

- Balance education and productivity needs.
- Involve management and employees in program development.
- Decide together what needs can be addressed first with the time, money, and resources available.
- Develop a shared vision for the future.

Maintaining Relations with Employees, Management, and Unions

- Successful outcomes and satisfied clients are achieved by reaching jointly agreed upon and reasonable goals.
- Constantly review the program's progress with supervisors, managers, and unions.
- Keep the lines of communication open, if possible through an in-house liaison person.
- Keep accurate records for your program on finance, and learner attendance and progress.

Suggestions for Maintaining a Successful Program

- Create a positive, actively involved relationship with employees, management, and union officials.
- Understand the need for flexibility:
  - anticipate and plan for problems, and
  - find creative solutions.
- Meet regularly with joint advisory teams to make sure clients are satisfied with the directions and outcomes of the program.

Conducting a Task Analysis

To address the needs of the company and employees:

- analyze jobs to determine the particular tasks they require;
- locate job or task areas that need improvement; and
- determine if literacy-related job skills need to be improved.

Analyzing Performance Problems

- Find out:
  - which tasks are critical to the job?
  - what skills need to be enhanced?
  - are there skills associated with promotion?
  - do jobs require retraining?
- Gather information through
  - interviews with employees, supervisors, and managers;
  - observation of workers on the job; and
  - examination of printed materials used by workers.
- Organize your information into a chart.

Example from a Job Task Analysis

Tasks	Subtasks
3. Determine what the customer needs	3.1 Ask the customer questions about what he needs.
	3.2 Determine if he needs information or help with solving a problem.
	3.3 If information is needed, go to the source of information such as the computer files or bank brochures.
	3.4 Gather the information needed.

After determining which job areas have performance problems:

- decide which tasks are most critical and pressing,
- find out what the specific problems are, and
- decide if these problems are caused by a need for improved literacy skills.

- A method used to analyze the aspects of job tasks that require reading, writing, computation, and problem solving.
- To help determine what types of literacy skills are needed to perform a job.

Example from a Job Task Analysis (continued)

Example:

Subtask	Literacy-Related Skills
3.4 Gather the information needed.	3.4.1 Analyze verbal and written information.
	3.4.2 Summarize information.
	3.4.3 Take notes.

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Building Curriculum from the Literacy Task Analysis

- Select tasks that cause most difficulty and build curriculum around those tasks.
- Collect samples of print materials used by workers and develop curriculum activities from them.

Example:

Literacy Skills Applied

Summarize information and take notes.

Possible Lesson(s)

To simulate the work environment, use role play situations.

Tellers can practice summarizing information and taking notes using the bank's manuals, brochures, and computer system.

Selecting Off-the-Shelf Materials

- Supplement your customized curriculum with suitable commercial materials.
- Choose materials based on their compatibility with
  - your literacy task analysis,
  - your custom-designed curriculum, and
  - the needs of the workforce.
- Supplementary materials include
  - adult educational materials,
  - vocational texts, and
  - industry publications.

Developing Job Aids

- Job aids restructure information to make it more easily understood, so that job performance can improve.
- They simplify job tasks to provide ongoing support after instruction is finished.
- Learners can help develop job aids as part of practicing new skills.
- Job aids include
  - flow charts,
  - checklists, and
  - lists of instructions.

Developing a Recruitment Plan

Strategies for building an effective recruitment plan include

- providing incentives for learners,
- asking supervisors and your advisory committee for help,
- maintaining visibility within the company, and
- meeting learner interests and needs.

Communicate to workers through

- announcements in company newspaper,
- fliers in paychecks,
- talking with employees and supervisors,
- in-house videos that explain programs, and
- arranging for "plugs" from employee representatives.

Evaluation and the Link to Productivity

Types of Evaluation

Formative evaluation checks the progress of a program while it is still under way, so that changes can be made.

- It addresses four areas of concern to the program: goals, resources, instructional processes, and impact.
- Issues include the following:
  - do all stakeholders agree on program goals?
  - are resources sufficient to achieve goals?

Summative evaluation assesses the total effectiveness of the program.

- It examines the program from three main perspectives:
  - achievement of program goals,
  - learner gains, and
  - impact on company productivity.

Conducting a Formative Evaluation

- Formative evaluation uses interviews with each group of stakeholders and classroom observations to learn how the program is progressing.
- Results, conclusions, and recommendations will be submitted to program planners in a written report while the program can still make changes.
- In addition, an external evaluator can provide an unbiased, expert opinion of the program.

Conducting a Formative Evaluation (continued)

Interviewing Participants

- Interview representatives from each group of stakeholders: (e.g., teachers, managers, learners, employee representatives, supervisors).
- Ask questions about goals, resources, processes, and impact.
- Keep questions open-ended—do not give your own opinion and then seek agreement.
- If a brief response is given, ask for more examples or reasons.
- Continue asking for examples until the interviewee runs out of responses.

Conducting a Formative Evaluation (continued)

Observing Classroom Activities

- Observe some classes—note the time of each activity and describe events as thoroughly as possible.
- Compare observations with interviews and program goals to determine matches and mismatches between what is actually occurring and stated goals.

Analyzing Interviews and Observations

To analyze the information gathered, look for

- areas of agreement and disagreement among stakeholders,
- potential mismatches between goals and resources, and
- inconsistencies between goals and instruction.

Conducting a Formative Evaluation (continued)

Reporting the Results

- Prepare a detailed progress report, highlighting strengths and limitations, and making recommendations.
- Have the report reviewed and then distribute it to the planning group in advance.
- Meet with the planning group to present the report—be prepared to answer questions and discuss implementing recommendations.

Working With an External Evaluator

- An external evaluator can provide an independent, unbiased opinion of the program and recommend needed changes.

Conducting a Summative Evaluation

- Summative evaluation documents the program's success in achieving its goals.
- Goals may include
  - attaining gains in literacy ability,
  - improving job productivity and attitudes,
  - expanding learners' educational goals, and
  - increasing involvement in literacy activities at home.
- Pre- and post-test results and other information gathered as part of summative evaluation will be used to write the Summative Evaluation Report.

Conducting a Summative Evaluation (continued)

Examining Achievement of Program Goals

The planning group should

- review and analyze program goals;
- examine program records, such as enrollment and retention rates, samples of custom-designed instructional materials, and samples of learners' work; and
- discuss how well goals were achieved.

Conducting a Summative Evaluation (continued)

Using Assessments as Pre- and Post-Measures

- Develop learner assessments while curriculum is being designed.
- The assessments should be linked to the learning objectives of the class and be relevant to both teaching and jobs.
- To allow results to be compared directly for evaluation purposes, administer the same assessments before and after a course.
- If a standardized test is used, it should be one that uses realistic tasks relevant to the job and life skills included in instruction.

Conducting a Summative Evaluation (continued)

Developing Supervisor Ratings

- Supervisor or team leader ratings of employees' job performance are a series of anchored rating scales that are custom-designed to suit your company.
- The supervisors or team leaders who will be making the ratings can assist you in developing the rating scales of job performance (e.g., completing paperwork, working in teams).
- Anchored rating scales help to ensure that pre- and post-ratings are made consistently to allow valid comparisons.

Conducting a Summative Evaluation (continued)

Analyzing Data

- The results of all pre- and post-assessments should be analyzed to look for learner gains.
- Compare average scores for the group of learners both for each item in the assessments and also for the total scores in sections of similar items.

Conducting a Summative Evaluation (continued)

Writing the Summative Evaluation Report

The Summative Evaluation Report will discuss

- attainment of program goals,
- measures of learner achievement (i.e., pre- and post-assessments), and
- increases in job productivity (i.e., company records and employee ratings).

The report should

- explain the goals and learner achievements assessed;
- describe the methods of assessment;
- explain the results, highlighting the extent of learner gains; and
- draw conclusions about the success of the program and recommend changes for the future.

A Practitioner's Guide

How to Gather and Develop Job Specific Literacy Materials for Basic Skills Instruction

By

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James A. Pershing, Ph.D.

A Practitioner's Guide

How to Gather and Develop Job-Specific Literacy Material for Basic Skills Instruction

INTRODUCTION

This practitioner's guide was developed for people (reading teachers, adult basic education teachers, vocational instructors, trainers in business and industry, and other basic skills providers) who are faced with the task of gathering materials and designing, developing and implementing job-specific basic skills programs for learners.

This guide is a supplement to The Work-Education Bridge, which provides a comprehensive review of basic skills research and practice. This guide is intended to provide educators and business trainers with a practical model for establishing cost-effective basic skills and literacy programs. It also provides practical advice about how to use the information to develop instructional materials and basic skills job simulations.

This approach to basic skills training is founded on a growing body of research which indicates people learn more rapidly and are able to retain more of what they learn when job-related materials and tasks are used in instruction. In order to provide such instruction, educators and trainers need to observe tasks as they are performed in the workplace, gather materials, and then develop instructional materials which will simulate the key basic skills and problem-solving tasks that learners will face on the job.

This doesn't mean every trainer must develop all the instructional materials he or she intends to use. The key to success is to focus on job-related tasks. A trainer might create a simple simulation by asking students to gather information from manuals or fill out forms related to a quality control procedure. If the learner experiences difficulty with decimals or computation, the trainer might ask him or her to practice with commercial mathematics training materials before returning to a more difficult job simulation. If reading manuals is a problem, learners might first practice with simpler commercial materials or with simpler safety instructions gathered by the trainer from the workplace. The goal remains the mastery of basic workplace skills and problem-solving tasks.

Although the time spent on simulations and instruction will differ from learner to learner, time might be divided in the following manner:

Direct Personal Instruction:	10-20%
Simulation Practice:	20-30%
General Job Reading Practice:	20-30%
Related Commercial Materials Practice:	20-30%

Although only 2 or 3 of every 10 hours of instruction may require simulations based on literacy task analysis, these simulations will be the key component in the instruction. Other activities will support performing these key job tasks.

WHY TAKE A JOB-LITERACY APPROACH?

Traditional academic methods for teaching reading, computation and problem-solving have failed to give adults the basic skills they need to function on the job (Mikulecky and Drew, 1987). Civilian and military research indicate that general literacy training is of limited value for the workplace. Gains made in classes using student-oriented materials often do not effectively transfer to the workplace and, in addition, what little gains are made tend to be lost in approximately eight weeks (Sticht, 1982). Studies have shown that workers and students read for different purposes. Workers typically read to find information to do a task. This "reading to do" is different from the "reading to learn" students do in school. These different types of reading require different strategies. By developing literacy materials that are built from the charts, manuals, and references tools workers use on the job, teachers can teach workers the literacy skills they need in order to perform these tasks successfully.

Successful workplace literacy programs are built around the daily literacy tasks workers encounter on the job. Instructional materials should emerge from the job task. For example, a worker unable to fill in a form because he can't compute decimals or read two column charts could do job context exercises which simulate these job tasks. The worker could also use commercial materials that show how to read charts or use decimals, but only as a supplement to the workplace simulation exercises.

Teaching literacy in a job context is more relevant for workers and therefore more motivating. The job literacy approach allows people to draw on their work and life experience so that they can more easily make the connection between what they know and what they need to learn. This approach builds confidence and leads to improved performance on the job.

WHAT IS LITERACY TASK ANALYSIS?

Traditional task or job analysis can be described as a way of critically assessing the components of a given job in order to describe the job, determine the required behaviors of that job, and identify the conditions under which these behaviors should occur (Davies, 1973).

Literacy Task Analysis is similar to traditional job analysis, but it emphases analyzing the aspects of job tasks which require reading, computation and problem solving. (Mikulecky, 1985). Literacy Task Analysis describes a method for 1) interviewing and observing workers on the job, 2) gathering the printed materials workers read to do their jobs, and 3) understanding the thought processes used by competent workers as they use printed materials to solve problems at work. For more information about Literacy Task Analysis, see Mikulecky and Drew, 1987, pages 45-51 and Mikulecky, 1985.

By observing and interviewing workers and examining job-related printed materials, instructors will be able to better understand the demands of the job, which will allow them to teach the basic skills required for those jobs. Although an instructor must be familiar with a worker's job it is not the job task but the basic skills a worker needs in order to accomplish the job task that is to be taught. For further discussion of this distinction and other related issues, see Philippi, 1988.

In addition to providing teachers with background information about the job, Literacy Task Analysis is a way for analysts to identify a broad range of job tasks involving reading, math and problem-solving skills. [Note: The term "analyst" is used throughout this paper to refer to the person conducting the Literacy Task Analysis. It is expected that the analyst will usually be a company trainer, college reading teacher, adult basic education teacher, vocational instructor or other literacy provider involved in developing and delivering instructional materials.] Instructors can begin to see the nature of the literacy demands that different jobs impose on workers.

Other outcomes of Literacy Task Analysis include samples of printed materials that workers use on the job, job task scenarios which can be used to create simulation exercises for workers, and notes on a competent worker's thinking process as he or she completes a task on the job. The worker's thinking process, also called metacognition, refers to the strategies and methods a worker uses to focus his attention while completing a task or solving a problem on the job. Sometimes these strategies are so automatic that to articulate them workers will need to be carefully questioned by analysts. Through Literacy Task Analysis, analysts can begin to see how a competent worker thinks through a task and can use this information when teaching other learners. The analyst's objective is to document the process a competent worker goes through, and then to use a model of that process to teach other people job-related basic skills. See Mikulecky, 1985; Mikulecky and Winchester, 1983; and Mikulecky and Ehlinger, 1986, for more information about problem solving and metacognition.

NEEDS ANALYSIS

Whether you are a vocational or ABE teacher, or a trainer developing materials for an in-house literacy program, the key question is: "For which job tasks should I conduct a Literacy Task Analysis?" Answering this question requires conducting some form of needs analysis. Needs analysis refers to a process for identifying the areas of greatest need, or the areas where performance should be improved. Needs analysis can take many forms that vary in depth and comprehensiveness. The form chosen is often--unfortunately--dictated by the resources available. Needs assessment helps analysts make decisions about which jobs and literacy tasks to analyze. It is also a way to gather information about workers, their environment and their jobs which analysts can use later to develop instructional materials. For an in-depth discussion of needs analysis, see Davies, 1981, pages 127-142; Davies, 1973, pages 57-70; Gagne and Briggs 1979; and Rossette, 1986, pages 60-67.

Choosing the Appropriate Job for Literacy Task Analysis

The information you gather in interviews with managers and supervisors will help you choose which jobs to analyze. Look for areas of agreement among managers and supervisors when selecting jobs and job tasks on which to focus the literacy task analysis. For example, if four of five managers report that entry-level quality control technicians have difficulty reading materials and gauges, calculating decimals, and recording the average, range and total for product weights, then the job of quality control technician would be appropriate to analyze. The job tasks best for Literacy Task Analysis should meet the criteria in Figure 1 in Appendix A.

Critical Tasks. To determine need, the most direct methods are to interview and observe workers, supervisors, and plant managers. The analyst will want to know which tasks are critical to the completion of the job. For example, will a worker's poor performance in a particular task lead to damaged products, safety hazards, personal injury, or great cost to the company? When a lack of basic literacy skills prevents a worker from doing his job adequately and the consequences are critical, this task may be a good target for literacy task analysis.

Promotability. Promotability is also a factor used to choose jobs for Literacy Task Analysis. Employers often report they have reliable workers who demonstrate desirable employability traits, such as a positive attitude, punctuality, and seniority, but who lack the basic skills required for higher level jobs. Employers may want to promote these workers but are understandably reluctant to do so. Conducting Literacy Task Analyses of these higher level jobs will enable analysts to develop materials that will prepare these workers for promotion to better jobs.

Jobs Requiring Retraining. Other jobs to target for Literacy Task Analysis are those for which workers must be retrained. Retraining has become commonplace in business and industry. The implementation of new technologies and processes occurs regularly. Many workers are required to return to the classroom to learn how to operate highly technical equipment or to master sophisticated processes. Some have been out of school for years and lack the basic learning skills required for retraining. By conducting a Literacy Task Analysis of a new job and examining relevant commercial training materials, analysts can help prepare workers for the demands of being retrained.

Frequent Mistakes. Tasks in which workers make repeated mistakes because they lack basic skills may be good targets for Literacy Task Analysis. By observing workers on the job and by questioning workers and supervisors, analysts may be able to determine basic skills deficiencies. These deficiencies may indicate a need for literacy training.

CONDUCTING LITERACY TASK ANALYSIS

This section focuses on the practical aspects of conducting Literacy Task Analysis. The following guidelines will help you be more effective as you gather information and printed materials, from which you will later design and develop instructional materials.

Choosing a Site

The first step in the Literacy Task Analysis process is choosing a site to visit. For vocational or adult basic education programs, industry in the community provides the best opportunity for observing workers on the job. Vocational teachers may want to select companies where their students are frequently placed. Adult basic education teachers may want to choose companies that can provide a wide range of occupational opportunities. If your program does not already have a working relationship established with a potential site, begin by contacting the personnel directors or the plant managers about the possibility of site visits and interviews. A good approach is to introduce yourself as an educator who is trying to improve instruction to better meet industry's needs. Large companies, or manufacturing companies in highly competitive markets, may be reluctant to allow outsiders into their plants for fear of exposing proprietary information. When contacting companies, explain the nature of your visits and assure managers that plant security will not be jeopardized.

Scheduling Site Visits

The most successful site visits are scheduled two to three weeks in advance. Scheduling in advance allows the analyst time to orient the contact person at the host company and allows the contact person time to schedule interviews and prepare for the analyst's visit.

The more carefully planned and well structured, the more productive a visit will be. Scheduling is best done with the personnel director, plant manager, training director, or other designated company representative. It is important the contact person at the company be aware of the purpose of the visit so that he or she can prepare to facilitate the interview and observation processes. Because it is unlikely that the contact person will be familiar with Literacy Task Analysis, it is critical the analyst state specifically what the visit will entail.

When scheduling a site visit, analysts must be prepared to explain the purpose of the visit and provide details of what will be required of the company. The Site Interview Guidelines in Appendix B is a summary of items the analyst should discuss with the company contact person. Then, after scheduling the visit, a copy of these guidelines can be sent to the contact person as a reminder. Modify the guidelines to reflect any special arrangements, such as agreements about the number of workers available for interviews, or the amount of time the company can allow workers to be away from their jobs. Even those trainers working within their own plant, who may have the advantage of familiarity with personnel and the workplace, should contact managers in advance and give them the Site Interview Guidelines. Advance scheduling facilitates more productive Literacy Task Analysis.

By allowing the analyst to interview and observe workers, the company is contributing its resources: the time a worker is away from his or her job costs the company in lost productivity. Acknowledging this contribution--whether the analyst is an outside literacy provider or an in-house trainer--is important in establishing rapport with the company. Discuss time frames with the contact person when scheduling a site visit to reach an understanding about how much time workers will be away from their jobs. Depending on how much the company is willing to contribute, it may be necessary to spend less time with workers, or to schedule additional visits in order to interview more workers. This may be especially true if it is a busy time for the company.

Analysts (especially those from outside the company) should plan to spend at least a half day on site, but no more than 2 days in succession. Less than a half day will not allow enough time to gather information; more than two days usually becomes draining for both the company and the analyst. However, each company and the relationships it forms with outside analysts will be different, so analysts will need to determine what works best in each situation. Even trainers working within their own companies, who may have the advantage of spending more time on location, need to be conscientious about not taxing their relationship with workers and managers. The goals for in-house and visiting analysts are the same, but in-house analysts may have a longer period of time in which to accomplish them. In fact, the process may become ongoing for trainers who are developing materials for in-house literacy programs.

Components of a Site Visit

Analysts from outside the site may want to include some combination and variation of the following guidelines in their site visits:

- o 10-30 minutes. Interviews with professional staff, such as the plant manager, personnel director, training director, and union officials.
- o 30-60 minutes. Site tour.

(Repeat the following steps for each worker interviewed)

- o 15-30 minutes. Interviews with direct supervisors.
- o 15-20 mintues. Select workers to interview and observe.
- o 15-30 minutes. Interview with worker.
- o 15-30 minutes. Observe the worker as he/she performs basic skills tasks.
- o 20-30 minutes. Gather and photocopy literacy materials.
- o 20-30 minutes. Photograph, tape record and/or video tape the worker on the job.

These guidelines work, but analysts should modify them to suit their situations. The guidelines are discussed in the sections below.

Interviews with Professional Staff

Professional staff are a good source for information. When gathering information about the company to determine its literacy needs, start at the top of the organizational structure and work down. Talk first with managers and supervisors to get a broad perspective, the "big picture" about the company and its special needs.

Figure 2 in Appendix A lists the various professionals in a typical company that you may want to interview and gives suggested questions for each. Don't feel you have to interview each of these company officials, or that you can ask only the questions suggested here. Talk with as many officials as time allows, using the questions in Figure 2 to gather information. Be prepared to rephrase questions to get responses. Many supervisors and managers will tell you, "These workers don't have to read anything on the job." The fact is, most workers DO read in performing their jobs, but the reading they do is often overlooked by managers.

Plant Manager. The plant manager can provide you with a comprehensive overview of the company, including its organizational philosophy and the relationships among departments. He or she will have very definite ideas about how employees should be performing and where major problems exist. Through careful questioning, he or she can often identify areas where poor basic skills inhibit performance. Sometimes, however, plant managers will not be aware of basic skills deficiencies among workers.

Personnel Director. The personnel director is a good source of information about the administrative materials workers need to read. Ask for copies of company policy manuals, insurance manuals, claim forms, sample check stubs, and general, company-wide safety material when meeting with the personnel director. Ask which company policies are most important and with which ones workers seem to have the most difficulty. Find out if workers frequently make errors in filling out claim forms or tax withholding information. Get copies of all printed materials workers must fill out or refer to regularly.

Training Director. Companies which have in-house training programs may have tested and measured their workers' literacy levels, reading and math abilities and have other records which will help you compile a profile of workers. If you are developing an in-house literacy program, you will want to know as much as possible about the workers you will be training. Ask the training director about the level of education of workers, any special training they have had, how long it has been since workers have been in a classroom or training situation, and about their study skills. This information will help you develop training materials that address the needs of the workers.

Union Official. In many companies a union official has an excellent rapport with workers and will be able to provide you with additional information about workers' job skills weaknesses. The union official may also know which skills workers want to acquire or improve. Ask for samples of the union contract, arbitration forms, union publications and any other printed materials made available to workers by the union. Find out about opportunities for promotion and about the literacy requirements of the higher level jobs. Ask about the role literacy plays in meeting those qualifications.

For trainers establishing in-house literacy programs, understanding the relationship between union and management can help you determine how to set up your training program. Some union officials will voice the concern that Literacy Task Analysis is nothing more than a subtle form of job evaluation. Others will want to know the relationship between training and promotion. Finding out about the company's current practice and trying to provide answers to such pressing questions can help establish a trainer's credibility. A supportive union official can help recruit workers for Literacy Task Analysis and in-house literacy programs if other recruiting efforts fail. An endorsement for a program from a respected union leader can have a positive influence on workers.

Site Tour

Before you begin interviewing, take a tour of the site at which you will conduct Literacy Task Analysis. Figure 3 in Appendix A lists things to look for when touring the site. These items can help you begin to form a "big picture" of the company, of its operations and employees. Learn about the company's different departments and their functions. For example, a food processing plant may have separate departments responsible for raw materials, quality control, packaging, shipping and receiving, and warehousing. Learning the relationships between these different parts of a company will help you communicate with managers and workers. Familiarity with the workings of the company will allow you to ask good questions and have a better understanding of his or her answers.

Touring the site before you begin analysis will also give you a better idea of what to expect during observations. For example, if the work site is noisy it will be difficult for you to talk with the worker as he or she works. Noisy conditions may require that you hold your questions during observation and ask the worker about them later in a quiet room away from the work station. If a job site is hazardous, you will need to take extra precautions as you observe workers. Be especially aware of safety regulations at the site and wear any protective or sanitation gear provided, such as safety glasses, ear plugs, hard hats or hair nets. Many manufacturing or food processing plants are noisy or dangerous.

Finally, as you tour the site, tune in to the attitudes of the employees you see. Do they appear to enjoy their jobs? Are they enthusiastic? Do they greet you as you walk through the plant? Look for clues that will prepare you for what to expect in the interviews. You may have to work a little harder to get information from workers who are unhappy or bored with their jobs.

Interviews with Direct Supervisors

Direct supervisors work most closely with workers and may therefore be the most knowledgeable about their strengths and weaknesses. When talking with direct supervisors, ask questions which focus on the results of workers' performances, such as "What happens when workers don't do the job correctly?" or "What mistakes do workers make most often?" These questions can help you locate the weaknesses in workers' basic skills and choose jobs for Literacy Task Analysis.

Selecting Workers to Interview and Observe

The workers you interview and observe provide you with the foundation information you need in order to develop instructional materials. For this reason, it is important to identify those workers who are capable and willing to work cooperatively with you. This section provides guidelines for choosing workers to interview, as well as suggestions for what to ask during interviews and how to establish rapport with the workers you meet.

Select workers with the help of the contact person in the company. Select workers who volunteer to be interviewed and observed. Tell workers that the interview will be confidential and that they are not being evaluated or tested. Assure them that the results of the interview will not be revealed to their employer and will be used only for the development of instructional materials.

You might choose (or be forced to choose) one of three different types of workers to interview: a master performer, an average performer, or a low performer. A master performer is a worker who is highly skilled in the job, probably with many years of experience. You should try to interview and observe this type of worker whenever possible, because he or she will show how the job can be done efficiently and effectively. When developing instructional materials, you can use this worker's performance as a model for learners. But there may be times when you will interview a worker who performs the job adequately, but has intermitent difficulty (an average performer), or a worker who is new to the job and performing poorly (a low performer). Average and low performers can provide information about where to make improvements. By comparing your observations of poor performers to master performers, you will discover the gaps between poor and superior performance. This will help you make decisions about what tasks to include in the instructional materials.

Interviewing Workers

Before beginning the interview you should already have toured the company and decided which of the following methods for interviewing and observing to use. Each method is described below, and their disadvantages and advantages are described in Figure 4 in Appendix A.

Option 1. Option 1 allows you to observe the worker perform the task and then move to a quiet area to ask him or her questions. If the job site is hazardous or noisy, and the job task has a small number of reading materials involved and is relatively simple, then Option 1 may be the best method. Have the worker bring all the forms, manuals, measurement tools, and any other materials he or she uses to perform the task. After asking the worker questions in a quiet area, return to the workplace and watch as the worker performs the task a second time. Use the second observation to clarify your understanding of the task.

Option 2. Option 2 follows the same steps as Option 1, but the analyst spends less time observing and more time interviewing the worker about the task. For a complex task that involves several printed materials and is also performed in a noisy or hazardous work area, Option 2 is a better choice than Option 1. For tasks which integrate several printed materials, the extra time spent talking with a worker is often needed.

Option 3. This method is the optimum situation for conducting the Literacy Task Analysis. When the work area is quiet and safe, you can ask questions during the job performance and you will achieve better results. The worker can explain each step of the procedure as he or she is performing it. You will have the opportunity to immediately ask questions about any steps that are unclear. There is less chance of misunderstanding when you can simultaneously observe the worker perform and question him or her about the task.

Regardless of which Option you choose, when observing workers on the job it is important to obey all safety rules and avoid interfering. Be prepared to get out of the way if an emergency arises and the worker must attend to his job without interruption.

Establishing Rapport. The interview will be more productive if you establish a good relationship with the worker right from the beginning. Start by introducing yourself and explaining in the worker's terms who you represent and the purpose of your visit. Explain that you would like to talk about the reading, writing, and math he or she uses on the job, and that you would like to watch and ask questions while he or she works. Make your purpose clear from the beginning so the worker is aware of the focus and objectives of your visit. You may need to explain what you mean by such terms as "reading." You might begin by explaining your intentions in the following way:

> I'm interested in any reading, writing, or math you do in your job. When I say 'reading,' I'm not just talking about books. I'm interested in the forms you read or fill out when you do your job. Blueprints or work manuals are also examples of the kinds of things I'll be asking you about during the interview. What I learn from you today will be used to make training materials for others who need to learn to do a job similar to yours. What kinds of things do you read or write as you do your job?

This explanation may seem painstakingly obvious to trainers and teachers, but many workers don't think of using these materials as "reading." Using this statement to begin an interview can save time and help workers understand more quickly what the analyst is looking for during the interview. If you begin the interview with the question "What kinds of materials do you read in your job?" you are likely to hear, "I don't read much on my job." as an answer. Figure 5 in Appendix A lists sample interview questions that can be used to help you conduct an informative interview.

Unproductive Interviews. You may find yourself in an unproductive interview. Perhaps the job you are observing is too basic to have any literacy tasks. A line worker whose job is to tape boxes shut or check the seal on packages may have nothing to read which is directly related to the job. Planning site visits and interviews in advance with the company contact person will usually avoid this type of problem and insure that you meet with appropriate workers. However, if you find yourself in an interview that appears to contain no job specific basic skills materials, switch the focus of your interview from the worker's job-related reading to whatever general reading he or she might do on the job. For example, ask the worker if he or she reads safety material, or written company policy or union information. You may be able to turn an otherwise unproductive interview into a useful one. But if after changing its focus you still feel the interview will not be not profitable, bring it to a close and see if there is another employee who is available to meet with you.

Observing Workers as They Perform Basic Skills Tasks

You will probably find that the task you observe has many sub-tasks which involve basic literacy skills. Focus on each sub-task and ask the worker detailed questions about how he or she uses the material. For example, as a machine operator performs the task of drilling a piece of stock to specification, he or she may complete the following sub-tasks:

o read a specialized work order form,
o refer to a blue print for dimensions,
o check a metric conversion chart, and
o fill out a job completion ticket.

If the sub-tasks are complicated or take a long time to perform, you may decide to focus on one sub-task per visit, such as reading the work order form. Your goal is to observe and interview the worker to gain enough information to develop a training activity that explains how to perform the sub-task. Then, if the entire sequence of sub-tasks performed by the worker justifies complete Literacy Task Analysis, you may choose to develop instructional materials that will simulate the entire process: reading the work order form, referring to the blueprint, checking the conversion chart, and filling out the job completion ticket. Observing workers perform sub-tasks will allow you to develop a simulation that combines sub-tasks into one complex task. The key to success is to realize that analysis of complex tasks cannot be accomplished in one visit, and to therefore schedule multiple visits.

Gathering Literacy Materials

One of the main purposes in conducting Literacy Task Analysis is to identify and collect samples of the reading, writing and computation workers do in the course of their jobs. There are two types of job-related reading material: task oriented and general. Both include many things that you or the worker may not initially think of as reading. Task-oriented materials include items that workers must read in order to actually perform their job. Examples of task-oriented materials include work orders that tell a machine operator which size drill to use, or maintenance manuals that tell a mechanic how many quarts of oil to put in an engine. On the other hand, general job-related reading materials include items that workers do not need to read in order to carry out a job, but are materials that make workers more confident, more knowlegeable, more efficient, and more valuable to a company. Examples include company policy manuals, safety rules, or insurance information. Figure 6 in Appendix A shows some of the different types of job-related literacy materials.

To supplement the materials you gather during Literacy Task Analysis, there are commercial materials on the market which are written to meet the needs of workers with low levels of basic skills. For help finding and choosing commercial materials designed for low-literate learners, see the list of materials in Appendix C. Many of these materials are written for vocational and technical school students and take a job-oriented approach. Some titles of commercial materials are listed in Figure 7 in Appendix A. For more information and sources of additional materials, see Derby, 1987 and Brown and Chang, 1982.

Photographing, Tape Recording and Videotaping

Always get a worker's permission to tape record, photograph or videotape him or her performing a job. Some people, especially those with poor literacy skills, may be sensitive to being asked questions about their abilities or to having their actions recorded. Be responsive to how a worker reacts to your questions and avoid being judgmental or critical. Make adjustments if a worker appears uncomfortable.

If you decide to tape record interviews for later reference, make arrangements with the company contact person to reserve a quiet space. It is best to find a room where you will be undisturbed by other workers. If possible, avoid the employee lounge during break times and the cafeteria during lunch hour. Even if you are tape recording the interview, take complete notes to avoid missing important details. The recorded interview can be useful in filling gaps in your notes or verifying key points, but should not be considered a substitute for note-taking.

Documentation

Your documentation of the observation and the interview are crucial. When you begin doing Literacy Task Analysis, there are two things which you should avoid because they prevent you from obtaining useful information:

o incomplete documentation, and
o failure to acquire the necessary forms and printed materials.

Do not rely on your memory alone to remember a process or the definitions of technical vocabulary or abbreviations. Developing successful instructional materials requires your close attention to detail. Thorough notes will eliminate the need for you to make unnecessary visits to the site. During the observation, take notes on the procedures or steps the worker goes through to perform the task; pay special attention to the sequence. Take notes on any reference materials the worker checks, questions he or she asks co-workers, notes he or she writes, and calculations he or she makes. Also take notes on the result or outcome of the worker's performance. Your notes will be helpful later when you begin developing materials. Be sure not to overlook any terms or abbreviations on the form that might be unfamiliar to a new worker. These words will become the key vocabulary in the instructional materials you develop.

For each form the worker uses in the task, be sure to get the following: two blank copies and one completed copy. The completed copy will serve as a model to which the worker can refer as he or she describes the process. This completed copy will also serve as a model when you begin developing instructional activities and simulations. One blank copy should be kept clean so that it can be used later to produce other blanks for the instructional materials you develop. Use the second blank copy to help you document the process and clarify specialized terms and abbreviations as the worker describes them to you.

Get copies of any other materials used by the worker; for example, obtain complete copies of reference manuals, including the table of contents, the indices and appendices. Likewise, if a worker uses a measurement tool, such as a caliper or micrometer, get copies of manuals or instructions that explain how these tools are used. These materials can be used during extended practice activities and they often contain illustrations that can be included in instructional materials.

DEVELOPING INSTRUCTIONAL MATERIALS

The purpose of the Literacy Task Analysis interviews and observations is to identify the areas in which worker performance needs to be improved, and to gather job-related materials and scenarios to use as the basis for developing instruction materials. Once these interviews have been conducted and job-related materials have been collected, you are ready to begin developing instructional materials.

Keep in mind that the materials you develop will be slightly modified to serve three different purposes:

- o pre-tests
- o basic skills instruction, and
- o post-tests

First, exercises and simulations will be used as "pre-tests" to screen workers to determine specific basic skills weaknesses. Upon entry to the program, workers will be asked to complete job simulations and activites using job-specific materials. Job sub-tasks (e.g., locating information on a form, computing product cost, and writing a brief summary) which workers are unable to complete will be targeted for instruction.

Second, increasingly difficult versions of instructional simulations will be used by workers to master the basic skills with which they are having difficulty. Teachers can use the simulations as teaching guides, modeling the process for workers who can then attempt to complete the tasks on their own.

Finally, the simulations and other instructional materials can be modified to be slightly different from the pre-test materials. They can then be used as post-tests to see if after instruction workers are able to complete the job simulations.

Curriculum Planning

Your should develop the activities and simulations directly from the Literacy Task Analysis you perform and the job materials your gather from the job site. Though you may encounter additional basic skills areas, your curriculum will probably include the following skill clusters:

- locating information,
- writing summaries,
- troubleshooting:
  - -formulating questions,
  - -devising alternate solutions,
  - -making and checking predictions,
- using multiple sources of information,
- problem solving and,
- technical vocabulary.

Keep these clusters in mind as you begin organizing your Literacy Task Analysis notes. Organize the literacy tasks you identify into these skill clusters. Other common job literacy processes identified by Philippi (Journal of Reading, 1988) are shown in Figure 8, Appendix A.

Documenting the Results of Literacy Task Analysis

To avoid forgetting important information, begin organizing and documenting the results of your Literacy Task Analysis as soon as possible after you have completed the interviews and observations. Use your notes to begin to isolate each task that you discussed with the worker. For example, in an interview with a warehouse clerk you may have discussed the task of filling an order using a Bill of Lading. Begin documenting your results by analyzing the steps for this task as described by the worker. What did he or she do first, second, and so on? What forms or manuals did he or she refer to?

To help organize the information, form two columns on a sheet of paper. In the left column, write a brief description of the steps of the task. Next, in the right column, list the related literacy elements contained in the steps you have written in the left column Your table might look like this:

Steps of the Task	**Related Literacy Elements Contained in the Step**	
I-1 Reviews Bill of Lading to determinewho the order is going to, which carrier will be used, which product items and quantities are to be shipped. Checks date and fills orders in order they are due.	1.1	Read and comprehend "Ship To" portion of Bill of Lading; understand technical vocabulary and abbreviations.
	1.2	Scan for date and prioritize; earliest due is first loaded.

Continue the process for the task "filling an order using a Bill of Lading" until you have listed each of the steps and related competencies that were revealed in your worker interview and observation. When you have finished, your table might look like the one in Figure 9, Appendix A.

Creating Instructional Simulations

Documenting the results of Literacy Task Analysis gives you a "blueprint" for developing an instructional simulation. You can design a complete simulation which would require a learner to do all of the steps in sequence as one job task, or you can develop more detailed lessons for individual.

Following is a simulation developed for a warehouse clerk. The job task is "filling an order using a Bill of Lading". The simulation begins with a short scenario of the job task.

Job Simulation Example: WAREHOUSE CLERK

An order has been received. There is not enough product in stock to fill the order. The worker must ship only part of the order. This requires that the worker:

1. Know the technical vocabulary and the abbreviations needed to read the note from the supervisor.

2. Read a chart and find the weights of the cases and skids ordered.

3. Multiply and divide to figure the total weights.

4. Write notes on the form using special punctuation and abbreviations. Note any changes in what was ordered and what has been shipped.

5. Correctly mark changes on the Bill of Lading.

6. Write a brief note to the supervisor of the next shift, explaining what has been done with the order.

Tell the learner what you'd like him or her to do. Give the simulation instructions and list the objectives you have for the learner. For example, you could say:

> This activity is very much like a job task you do as a Warehouse Clerk. As you do this activity, you will play the role of a warehouse clerk. You have been given an order and some information from your supervisor. It's your job to fill the order and complete the form correctly. Read the note and use the attached Bill of Lading and Product Code Chart to fill the order. Fill the order just as you would on the job. You have 45 minutes to complete the simulation. Please time yourself or ask a friend to.

Among the sub-tasks you will need to complete are the following:

1. Calculate the changes in the orders and record

   - the cases shipped,
   - the new weights, and
   - make any changes in the number of full units and loose cases.

2. Choose which skid numbers you'll send. The note tells you which skids you can choose from. Make the selection and add up the skids in the center of the form.

3. Complete the Bill of Lading Summary at the bottom of the form. Be sure to fill in these blanks:

* total units
* total loose cases
* number of packages
* weight (subject to correction)
* total cases
* total weight
* date shipped (use today's date)

4. Write a note to your supervisor that explains how you took care of this order.

    * explain that you did what was asked
    * detail any changes that you made on the Bill of Lading

Provide the learner with the appropriate forms needed to complete the simulation. These include 1) note from supervisor explaining changes to be made 2) partially filled out Bill of Lading Form and 3) the Product Code Chart. See Figure 10 in Appendix A for copies of those forms.

A competent, experienced worker may have little difficulty completing the simulation. He or she may use the simulation as a way to practice and enhance existing skills. Other workers who are new to the job or less experienced may have difficulty with some parts of the simulation. For example, workers who have difficulty understanding abbreviations and specialized terms may need to work through a lesson designed to familarize them with specialized vocabulary. Others may need instruction in how to locate information on the product code chart and do the calculations to correct portions of the Bill of Lading. If the instructor is present during the simulation, it will be possible to quickly spot learners who are having difficulty. If the learner cannot do the simulation, the instructor can walk the learner through it asking questions and making note of problem areas (i.e., technical vocabulary, knowing how to set up computations, being able to summarize, etc.).

Tailoring Simulations to Workers' Needs

To develop instructional activities for complex forms and tasks, it may be necessary to break the forms and tasks into smaller parts and develop instructions which focus on each part. For example, the Bill of Lading form is made up of three main parts:

1. the top part with carrier and billing information,

2. the middle part with product description and quantity, and

3. the bottom part which summarizes product and shipping information.

Whether the job task is reading and filling out a form (like the Bill of Lading example), locating information in manuals, or reading diagrams, breaking the task into its smaller parts to create lessons is an effective technique. The key is to keep the lessons you create imbedded in a locating information in manuals, or reading diagrams, breaking the task into its smaller parts t create lessons is an effective technique. The key is to keep the lessons you create imbedded in work-related context so that they are relevant to workers. Following are examples of lessor developed from task oriented and general job reading materials. They focus on vocabular building, locating information, and reading charts and tables. Since workers often need to be abl to understand technical vocabulary specific to their job, orienting the learner to the printe technical language is a good place to start.

Technical Vocabulary. Begin by identifying the key vocabulary words used in the job an preparing short lessons which focus on and orient learners to these specialized terms. Technica vocabulary may include frequently used technical terms, acronyms and abbreviations. They ma be words that appear on a form, or words that a worker pointed out to you during Literacy Tas Analysis. There is an example of a vocabulary lesson which focuses on technical terms in Appendi D, Example 1.

You can also develop vocabulary exercises by using the forms themselves. This techniqu produces lessons quickly without expensive production costs. First, provide learners with verba instructions about the function of the form being covered. Tell the learner about all the key area on the form and the key terms with which they need to be familiar. (If you are addressing a grou of learners, show an overhead and provide a handout of the form and the terms to each learner i possible.) Next, take a blank form and number the key terms on the form that learners are to know Ask learners to do one of two things:

1) Write, in their own words, the meaning of the term numbered on the form. This is especially good for abbreviations and acronyms.

or

2) Match the key term numbered on the form with its correct description provided on a separate sheet. (This requires that the teacher write the definitions or explanation of key terms available to the learner in advance of the exercise.)

For an example of this type of vocabulary exercise, turn to Appendix D, Example 2.

The examples shown in the Appendix D were developed from task-oriented job forms Similar vocabulary lessons can be developed using general job literacy materials such as insurance and company policy manuals. The example in Appendix E deals with a general job literacy task. understanding a company's group insurance plan. In this example, the words from a company insurance manual have been used to create lessons which link these job-related words to synonyms from more general language.

Locating Information. Workers frequently must be able to access information quickly, often from multiple sources. In your Literacy Task Analysis with workers you probably identified several sources of information, such as safety bulletins, repair manuals, or company policy and insurance sure to make the exercises as realistic as possible by creating situations, examples and questions that are similar to those a worker might encounter on the job.

Appendix F contains a sample lesson on using a table of contents. The subject matter for the lesson comes from an employee handbook which is issued to each employee and is reportly used regularly by employees. In delivering lessons on these and other basic skills tasks, the teacher should first "model," or demonstrate for the learner, the process which he or she goes through to use the table of contents. He or she should then give learners the opportunity to practice the process.

Reading Diagrams, Charts and Tables. Lessons on reading diagrams, charts and tables can be effectively complemented by making a reduced copy of the diagram and then making notes in the margins with arrows to point out the key components. Give photocopies of these diagrams marked with your notes to learners to supplement your modeling of how to read the diagram. Write the same notes into the lesson instructions to provide the learner with additional reading practice and to reinforce the key information about the diagram. Two sample lessons for reading diagrams and tables can be seen in Appendix G. Lesson 1 focuses on reading a ceiling fan diagram to get part numbers and Lesson 2 shows how to read a table to determine hourly pay rates. Notice the scenarios which precede each exercise to these provide learners with a realistic purpose for doing the activity. These scenarios are key to helping learners identify the activity and recall background information about the setting of the activity.

These are some of the types of task oriented and general basic skills instructional materials that can be developed from Literacy Task Analysis and printed workplace materials. But as mentioned earlier, the simulations and literacy materials you develop will constitute only about 40% to 60% of the instructional time spent with learners. A trainer will spend about 10% - 20% of his or her time in individual instruction with the learner and may devote 20% - 30% of class time activities with related commercial materials.

Direct Personal Instruction

In the time you spend providing direct instruction to workers, show one or two examples of the materials you use to teach the reading process. Model the desired process for learners by showing them each step and verbalizing the questions you ask yourself as you work through the process. For a task such as using an index or looking up information in a glossary, you may want to do a modified Literacy Task Analysis on your own strategies and relay these to the learners. For more task-oriented basic skills, rely on what you learned from your Literacy Task Analysis with workers. Model for the learners how an experienced worker does the task, explaining as fully as possible the subtleties of the task and those aspects that might seem obvious to someone with a higher level of basic skills. Provide several examples and allow learners to increase their level of participation in the completion of the task until they are ready to attempt the simulation activities alone. Then, allow the learners to work through several simulation activities; provide them with feedback as necessary. Be sure to develop 2-3 variations for each simulation to provide learners with enough practice to master the task. For more information about meeting the needs of a diverse group of learners, see Philippi, 1988.

Use of Related Commercial Materials

Related commercial reading materials may be used to supplement the task-oriented and general job reading instructional materials you develop. For example, if you are teaching learners to read charts and graphs for their jobs, it would be appropriate to provide learners with generic commercial materials which address these skills and provide additional practice. However, these commercial materials on their own are not likely to lead to improved performance on the job because they lack the specific content to tie them directly to the worker's job. Without a direct subject matter link, the learner will be less likely to make a connection between the activities and their own jobs. Therefore, when commercial materials are used, point out and emphasize to learners the connections between what is featured in the commercial materials and what is required of them on their jobs. When this is done effectively, commercial materials can provide the instructor with useful literacy material.

Other Commercial Sources

Other sources of supplementary reading material for learners can be found in local and national newspapers and magazines. Articles about the employee's company or about a company product with which the learner is familar are excellent sources for reading practice. Although many newspapers and magazines are written at a reading level that will be too difficult for some learners in your program, research shows that adults are able to read and understand a higher level of material if it is on a subject with which they are familiar. Background knowledge can make a limited difference in the ability of a worker to comprehend difficult reading material. Mikulecky, Sticht and others have found that workers can understand job-related material that averages 1-2 grade levels beyond their normal ability level (Mikulecky, 1982; Stitch, et. al., 1986). Adults bring a lifetime of background knowledge to a reading task. If workers are able to make the connection between what they know and what they read about a subject they are often able to read material that would otherwise be too difficult.

Uses and Limitations of Readability Formulas

"Readability" refers to the index of the ease of comprehension of a particular passage. There are many formulas available for computing readability, including some on computer programs, which you can use to determine the approximate reading difficulty of materials.

Readability formulas can help you choose materials to use in the classroom. The ability to approximate readability levels of workplace materials can also help when you explain to company managers and training personnel the reading challenges presented to workers by particular materials. Appendix H contains examples of the Fog and Forecast readability formulas and explains how to apply these to assess job materials. Even though these formulas can be helpful use them with the understanding that they only approximate how difficult material is to read and are not conclusive in their determinations.

Readability formulas are of limited utility in the sense that they can only assess factors such as word difficulty and sentence length. Difficult words are usually only able to be broadly defined as being multi-syllable words. The formulas cannot be applied to non-prose passages (i.e. poetry or graphic material) and they are usually based on a particular audience (i.e. school children or a cross-section of the reading public). When a target audience or a passage is outside the scope of a given readabilty formula, the utility of the formula drops considerably.

On the whole, if two passages are written on the same topic, readability formulas can indicate which passage is easier to read. The formulas are far from perfect, however, and need to be modified by informed human judgment. For example, if a passage is filled with conceptually difficult but short words (i.e. ion or valance), and the words are likely to be unfamiliar to the reading audience, the user would be wise to mentally increase the difficulty level computed by readability formulas. If, on the other hand, the reader is likely to be very familiar with a topic and it's vocabulary (i.e. a sport or technical area), then words which the formula considers difficult may actually be simple to a reading audience. In such a case, the user of the formula would need to mentally lower the difficulty level computed by the formula.

Novices with readability formulas are often overly impressed with the apparent accuracy of a figure like 10.33 grade level. In actuality, the figures are not anywhere near the level of accuracy implied by two decimal places. View the grade level figures as of a range of difficulty levels (i.e. 10.33 + or - a year on each side). It is still helpful to know that a person with a grade school level of reading ability might have extreme difficulty with the passage, but one should not exclude from the potential audience readers at the 9th grade level.

In short, the formulas can give indications of reading difficulty levels. However, they should be used with a good deal of caution and modified by intelligent judgments based on information about the reading audience. It is important to note that more expensive, actual test-case information from a trial run that has readers use materials is often more accurate then to the short-cut of using readability formulas.

Sources of Support and Assistance

As you work to develop instructional materials for workplace literacy programs, you may have a need for professional support or collaboration. Community resources such as colleges and universities, adult basic education centers, literacy coalitions, and employment and training councils or agencies may provide information, materials and consultation. Kangisser writing for the New York Business Council for Effective Literacy (Kangisser, 1987, pp. 9-12) suggests a variety of ways to create an effective literacy program planning team. Kangisser points out the importance of choosing a capable educational provider to assist with program development and offers guidelines for making this choice. In addition, Kangisser has compiled a list of individuals and organizations (Ibid., pp 30-35) from around the country who have agreed to be listed as potential resources in program planning, development, operation, and other areas including:

* job analysis
* job-related curriculum development
* curriculum for limited-English speakers

* assessment and evaluation
* using computers for skills training
* using volunteers
* general technical assistance
* reading and writing development,
* operation of general literacy/high school diploma programs
* union programs.

Featured on the list are experienced professionals from organizations including businesses and industries, universities, adult basic education centers, vocational schools, community colleges and government agencies. Write to the Business Council for Effective Literacy, 1221 Avenue of the Americas, New York, NY, 10020, for copies.

In addition, Appendix I contains references for sources of basic skills programs, teaching materials, program development guidelines, and occupation-specific competencies from a variety of civilian and military programs.

SUMMARY/CONCLUSION

Civilian and military research indicate that general literacy training is of limited value for the workplace. Gains made in classes using school-type materials are minimal at best, and often do not effectively transfer to the workplace. In addition, gains tend to revert in approximately eight weeks. In contrast, workers who learn basic skills using materials drawn from the workplace tend to master basic skills more rapidly and retain what they learn over time. This may be because adults find in workplace applications of basic skills more relevant and because workplace instructional materials are more likely to lead to continued practice of basic skills on the job.

A workplace literacy approach to basic skills instruction requires some custom designing of instructional materials. Instructional materials which simulate actual job tasks can be devised after conducting Literacy Task Analysis which involves:

* gathering print materials,
* observing workers use those materials on the job, and
* interviewing workers about their thought processes while using workplace materials to solve problems.

The process of gathering information and designing materials need not be overwhelming. Custom-designed instructional simulations can comprise the core of an instructional program without taking the majority of instructional time. Simulations based on Literacy Task Analysis can constitute 20% - 30% of learning time. Simulations are supplemented by a combination of directly related commercial materials (e.g., skill exercises in math, graph and instrument reading, and form-filling). and general job-related materials (e.g., safety manuals, insurance booklets, and company policy manuals).

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APPENDIX A

FIGURES

Figure 1

Choosing the Appropriate Job for Literacy Task Analysis

Jobs Usually Selected for Literacy Task Analysis

Entry-level jobs
Mid-level jobs to which entry-level workers could be promoted

Analyze those job tasks in which:

- results of performance are critical
- frequent mistakes are made
- workers need training in order to be promoted
- workers report difficulty
- new technology has been implemented

Figure 2

Interviews with Professional Staff

TITLE	PERSPECTIVE	QUESTIONS TO ASK	INFORMATION TO BE GAINED
PLANT MANAGER	Big picture; top down, relationships among departments	Where do you perceive performance gaps caused by lack of basic skills? In which departments do basic skills have an important, even critical, impact on the performance of entry-level workers? Where do you see the greatest need for improvement in basic skills education? Where whould you notice effects if improvements are made? If they aren't?	Areas perceived to have greatest need for improvement. Jobs most critically affected by lack of basic skills Which jobs to task analyze. Which reading tasks have greater priority and importance. Which jobs have major productivity and accident problems which might relate to basic skills.
PERSONNEL DIRECTOR (In smaller companies, personnel directors may take on training responsibilities.)	Broad; policy-oriented	How does basic skills literacy affect hiring and promotability? Do applicants have the necessary basic skills to perform the job once hired? Do employees have trouble reading insurance information, or filling out applications or claim forms? Do employees need help understanding company policy manuals regarding sick time, benefits, holiday pay, etc? Do employees have difficulty calculating wages or figuring out deductions from their paychecks?	The extent to which new hires are able to independently learn on the job. Which general reading tasks are important for workers to master (i.e., memos, insurance information, etc.). Areas of weakness in math and problem solving.
DIRECT SUPERVISOR	Focused on tasks of job; sees workers' daily needs	In which entry-level jobs do workers seem to have the greatest need for literacy skills? How is plant productivity affected by workers' ability in reading, writing and math? Do you have workers you'd like to promote but feel they can't handle the literacy requirements of a higher-level job?	Consequences of poor performance due to lack of basic skills (i.e., productivity, safety, etc.). Areas where improvements in basic skills can lead to a better chance of promotion. If workers lose time covering for others with low basic skills.

continued

TITLE	PERSPECTIVE	QUESTIONS TO ASK	INFORMATION TO BE GAINED
TRAINING DIRECTOR	Training issues: learner characteristics; learning needs;	What is the company philosophy regarding basic skills literacy training?	The extent to which basic skills training is matched to actual job demands.
		Is there a basic skills program in effect?	Extent and nature of current education and training.
		What other training is currently going on?	Worker characteristics to be considered when designing literacy materials.
		What difficulties do workers have in current training programs?	Worker's educational background and learning skills.
		What is the reading level of your average entry-level worker?	
		What is the education level of your average entry-level worker?	
		What special training needs do workers have?	
		What is the age range of workers?	
UNION OFFICIAL	Employee needs; managment issues	What is the relationship between management and workers?	
		What role does the union play in training and basic skills education?	Role of the Union.
		What printed materials should workers read to be informed of their rights and responsibilities and of union services and issues?	Literacy requirements for fulfilling union participation.
		Have previous problems ever undercut training programs?	Workers' concerns about training and evaluation.

Figure 3

Things to Look for During a Site Tour

ENVIRONMENT	WORK FORCE	LITERACY MATERIALS
(what aspects of the workplace will influence my observations and safety?)	**(What social networks seem related to job problem solving?)**	**(What materials requiring basic skills are visible from the floor?)**
noise level	work in groups or alone?	safety signs
sanitation	use telephone?	policy notices
safety	ask questions of lead workers?	bulletin boards
hazardous conditions	operate independently or with group conferences?	safety or health brochures
machines	group approaches to problem solving?	signs or job aids at work stations
special tools	enthusiastic or bored?	computer displays
vehicles	friendly toward you and host?	libraries or information centers
chemicals		
gases		

Figure 4

Methods for Interviewing and Observing

METHOD	ADVANTAGES	DISADVANTAGES
Option 1 Observe worker perform task with no opportunity to ask questions. Interview worker away from job. Observe worker perform task with no opportunity to ask questions.	Interviewer can observe procedures, see literacy tasks and note processes before discussing with the worker. Good when workplace is noisy or hazardous. Return for 2nd observation-- opportunity for demonstration and clarification. Can tape record interviews.	Can be more time-consuming than options 2 & 3; interviewer can miss details.
Option 2 Interview worker away from job site Observe worker perform job and ask questions Interview worker away from job site.	Can focus quickly on literacy tasks; can be selective in observation; 2nd interview provides clarification. Good for hazardous or noisy worksites or complex job task involving multiple reference materials. Can tape record.	Can take more time than option 3. Extended interviews difficult for some subjects.
Option 3 Simultaniously observe and interview worker while performing job	Best in safe, quiet work environments. Worker can explain as he/she does job task. Interviewer can immediately question unclear procedures. When permissible, the most desirable approach.	Cannot be done in noisy or hazardous work site; can interfere with worker doing job. Little opportunity for tape recording.

Sample Interview Questions

BACKGROUND
What is your title and job description?
How long have you been in this job?
How did you learn this job?
What special training did you have for this job?
How important is reading, writing and math to the successful completion of your job?
What do you find is the most challenging part of your job?
What is the most important part of your job?
What could go wrong if you didn't do this part of your job correctly?

LITERACY TASKS
Will you please show me the books, manuals, forms or charts you read in order to do your job?
Which of these is hardest to read?
How often do you use this manual (chart, form, etc.) in doing your job?
If you were training a new person to do this part of your job, what would he have to know before you could teach him/her?
What would a new person find most challenging about learning your job?
What reports, memos, summaries or other written messages do you read or write in your job?
What math or science skills do you use in your job?
What technical equipment do you use in your job?
What special measuring tools do you need to read to do your job?
What computer equipment (or computerized machines and tools) do you use in your job?

TRAINING AND PROMOTABILITY
In which parts of your job would you like to improve?
What skills would you need to learn in order to be promoted to a different or better job?
Are you currently being trained (or are you training someone new) to do this job?
What is most difficult about the training you are in now?
How has your job changed since you first started it?
Do you expect to be going back to school or training in this or another job?
Will you please show me the training manuals and exercises which are most difficult for you?

PROBLEM SOLVING (METACOGNITION)
Explain what information you are looking for when you read this manual (form, chart, etc.)
Tell me, step by step, how you get information from this manual (etc.).
Tell me, step by step, how you got the information when you were new on the job.
Show me how you know....
Explain in detail...
How did you know to do that?
How did you learn that part of your job?
What do you do first, second, third, etc.
What do you do if you don't find what you are looking for the first time?
Where else could you go for this information?

Figure 5 cont'd

ADMINISTRATIVE

Will you please show me the general safety material you read in your job?

Will you tell me how you read:

your insurance manual
your time card or check stub
your income tax withholding forms
company policy manuals
union literature
company news bulletins

Job-Related Literacy Materials

Task-Oriented Reading	General Job Reading	Related Materials
reference manuals	safety manual	Vocational Basic Skills Booklets
job aids	company policy manual	Graph & Instrument Reading Excerises
measurements tools	insurance manual	Measurement Exercises
graphs, scales, charts, tables	insurance forms	Functional Problem Solving Exercises
blueprints	accident forms	Using Tables and Reading
procedural guides	company newsletters	Form-Filling Exercises
work orders, forms	bulletin board memos	Trade Literature
first aid instructions	union brochures	Automotive
computer printouts	payroll check stub	Nursing
computer screen displays	calculate wages	
metric conversion charts	posters	
diagrams & flowcharts	training manuals	
product labels	textbooks	

Commercial Literacy Materials

Ackerman, Anne S., Miriam Levitt Baygill, and Marilyn Fishel. It Happened on the Job. New York, NY: Globe, 1978.

Crouse, William H. The Auto Book. New York, NY: McGraw-Hill 1984.

DeKryger, William J., Robert T. Kovacik, and Saverio G. Bono. Auto Mechanics: Theory and Service. West Chicago, IL: South-Western Publishing, 1986.

Mikulecky, Larry J. and Rad A. Drew. On the Job: Readings in Real-life Competencies. Cambridge Book Company, New York, NY, 1987.

Physician's Desk Reference. 40th ed. Oradell, NJ: Medical Economics Company, 1986.

Project Earth. Sauk Centre, MN: Vocational Biographies, Inc., 1982.

Project Explore. Sauk Centre, MN: Vocational Biographies, Inc., 1985.

Sanders, Donald H. Computers Today. New York, NY: McGraw-Hill, 1983.

Webster, Jay. Auto Mechanics. Encino, CA: Glencoe Publishing Company, 1986.

Adapted from: Derby, T. "Reading Instruction and Course Related Materials for Vocational High School Students." Journal of Reading, January 1987.

Figure 8

On-the-Job Reading Processes

(Excerpted and adapted from Philippi, 1988)

VocabularyVocabulary
Recognize common words and meanings
Recognize task-related words with technical meanings
Recognize meaning of common abbreviations and acronyms

Literal comprehension
Identify factual details of specifications in texts
Follow detailed, sequential directions to complete a task
Determine the essential message of a paragraph

Locating information within a text
Use table of contents, index, appendices, glossary, to locate information
Locate page, title, paragraph, figure, or chart needed to answer questions or solve a problem
Use skimming or scanning to determine if text contains relevant information

Using charts, diagrams, and schematics
Use a complex table or chart requiring cross-referencing
Apply information from tables or graphs to locate malfunctions or to select a course of action
Isolate each major section presented in a schematic diagram
Follow sequenced illustrations or photographs as a guide

Comparing and contrasting
Combine information from multiple sources that contribute to the completion of a task
Determine presence of a defect of extent of damage
Classify objects by size, color, or significant marking

Inferential comprehension
Determine meaning of figurative, idiomatic, and technical meanings of terms, using context clues or reference sources
Make an inference from text that does not explicitly provide required information
Interpret codes and symbols

Recognize cause and effect, predicting outcomes
Use common knowledge to avoid hazard or injury
Apply preventative measures prior to a task to minimize security or safety problems
Select appropriate course of action in an emergency

Figure 9

Literacy Task Analysis
Warehouse Clerk

Task: Filling an order using a Bill of Lading

<u>Steps of the Sub-Task</u>

I-1
Reviews Bill of Lading to determine who the order is going to, which carrier will be used, which product items and quantities are to shipped. checks date and fills orders in order they are due.

I-2
Use specialized ID numbers on Product Code Chart to show which cases are being shipped and the origin of each case.

I-3
Use the Product Code Chart to document jar size, weight per jar and weight per skid.

I-4
Correct the order to reflect what is actually shipped. Note why the order is changed (product not in stock, etc.)

I-5
Leave brief note for supervisor or next shift explaining shortages in stock, reasons for delay or other noteworthy message.

Related Literacy
<u>Elements Contained in the Steps</u>

1.1 Read and comprehend "Ship To" portion of Bill of Lading; understand technical vocabulary and abbreviations.

1.2 Scan for date and prioritize; earliest due is first loaded.

2.1 Read and understand specialized locator codes, and check against skids to determine proper shipment.

2.2 Compare cases shipped to cases ordered and note any differences. Correct with notation.

3.1 Classify by product code. Check to be sure code and shipment match. Locate info on Product Code Chart and to Bill of Lading.

3.2 Locate information on Product Code Chart. Use to calculate loose cases.

3.3 Locate and verify maximum weight by checking routing information on "Ship To" portion of Bill of Lading.

4.1 Use proper abbreviations for corrections on form.

5.1 Summarize changes made, shortages, etc. Write legible note summarizing changes made, etc.

Figure 10

Forms For Warehouse Clerk Simulation

Form 1

Note From Supervisor:

Joe:

Please take care of this order for me. There are just a couple of things you should know before you start.

1. The order calls for 9 full units of 48805. We only have 8 1/2 units. Send what we have and make the adjustments to the Bill of Lading.

2. The order also calls for only 10 units of 48814. We have 11 1/2 units in stock. I'd like you to ship the entire 11 1/2 units. Make the changes on the Bill of Lading.

Take the shipments for the units 48805 from the V76JL skids numbered between 150 and 250.

Take the shipments for the units 48814 from the V76JL skids numbered between 245 and 345.

Be sure to record all this on the bill of lading. Let me know with a note how all this works out.

Thanks,

Jan

Form 2: Bill of Lading

APPENDIX A

UPC MFG

Shipping Order Number 74305

Ship To Wicker Products Company
1543 South Street
Bakersfield, Calif. 92634

Ship-Via Car/Van No

Sales Ord. No	Trans	Terms Cd.	Terr. Type	Order Date	Req. Ship Date	Price Class F F Q	Sls. Rep	Bill To Cust

Terr	Ship To Cust.	Loc. Code	Shipped From	Routing	Del. Carrier
			Bigger, W. Virginia	National Trucking	Interstate Loader

Zone	Block	Cust. P.O. Number	Schd. Ship Date	Rec. Loc.	Bill To Name And Address
			03/10		

Std	Carrier Cd.	Route Cd.	EX CD-1	EX CD-2	EX CD-3	OCC Order Recvd Date	Comm Code	Seal No	Master B/L No

Cs. Shp	Qty. Ord.	Wt./Cs.	Prod. Code	Size	Description	Full Units	Loose Case	Gross Wt.	Frt. Cd.	Remarks/Total Cs. Recvd	Remarks/OS & D
	630	36.5	48805	12/30	Popcorn	9		22995	K		
	600	34.5	48814	8/45	Popcorn	10		20700			
				V7450							
				V76JL							

Units	Tot. Loo. Cs	Total Cube	Control Center Date	Entered By	Product Hash Total	Serial No
						89517

Bill Of Lading Summary

No. Of Pkgs.	Frt Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.

Pg Of	Date Shipped	Address Correspondence To Beatrice/Hunt-Wesson, Inc	Total Cases	Total Weight	Date Received

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APPENDIX A

Form 3
Product Code Chart

48805 - 12/30 oz. - 1 case 36.5 lbs., 1 skid 2,555 lbs.
1190 cases Weight 43,435 for 17 skids
1260 cases Weight 45,990 for 18 skids
1330 cases Weight 48,545 for 19 skids
1400 cases Weight 51,100 for 20 skids

48810 - 24/15 oz. - 1 case 37 lbs., 1 skid 2,072 lbs.
1008 cases Weight 37,296 for 18 skids
1064 cases Weight 39,368 for 19 skids
1120 cases Weight 41,440 for 20 skids
1176 cases Weight 43,512 for 21 skids
1232 cases Weight 45,584 for 22 skids

48814 - 8/45 oz. - 1 case 34.5 lbs., 1 skid 2,070 lbs.
1080 cases Weight 37,260 for 18 skids
1140 cases Weight 39,330 for 19 skids
1200 cases Weight 41,400 for 20 skids
1260 cases Weight 43,470 for 21 skids
1320 cases Weight 45,540 for 22 skids

48819 - 18/15 oz. - 1 case 28 lbs., 1 skid 2,240 lbs.
1360 cases Weight 38,080 for 17 skids
1440 cases Weight 40,320 for 18 skids
1520 cases Weight 42,560 for 19 skids
1600 cases Weight 44,800 for 20 skids
1680 cases Weight 47,040 for 21 skids
1760 cases Weight 49,280 for 22 skids

48822 - 10/5 oz. - 1 case 53.0 lbs., 1 skid 2,120 lbs.
720 cases Weight 38,160 for 18 skids
760 cases Weight 40,280 for 19 skids
800 cases Weight 42,400 for 20 skids
840 cases Weight 44,520 for 21 skids
880 cases Weight 46,640 for 22 skids

48833 - 144/4 oz. - 1 case 39.5, 1 skid 1,106 lbs.
560 cases Weight 22,120 for 20 skids
616 cases Weight 24,332 for 22 skids
672 cases Weight 26,544 for 24 skids

APPENDIX B

SITE INTERVIEW GUIDELINES

Purpose:	To identify and analyze the basic skills of entry level jobs which are critical to successful job performance.

Interview with Supervisors (15-20 min.)	Interviews with plant supervisor and (or) the employee's direct supervisor to find out:
	o which job tasks are most critical to job success
	o which job tasks are most frequently performed
	o which job tasks are most problematic
	o where poor performance is occurring
	o useful pre/post measures of employee performance
	o current performance standards, measured by:
	  * time/motion study
	  * worker efficiency
	  * rate/production

Site Tour	To acclimate the interviewer to the work environment.

Literacy Task Analysis

Purpose:	To analyze designated job tasks and gather job-related printed and computational materials. The emphasis is on finding out how employees use printed materials to solve problems on the job.
Employee Interview Part 1 (15-20 min.)	The first phase of the Literacy Task Analysis begins with a one-on-one meeting between a model employee and the interviewer. This should take place in a private meeting room and not at the work station. The employee will be asked to describe his/her job in detail with particular emphasis on job-related reading, writing and math. The employee should bring samples of job-related reading materials to his or her meeting.
Employee Interview Part 2 (20-30 min.)	In the second phase, the interviewer will observe the worker on the job performing designated tasks. It is ideal if questions can be asked while the employee does the job. If this is not possible, it will be necessary to return to the meeting room for further discussion.

Employee Interview Part 3 (10-20 min.)

Return to meeting room (if necessary) to clarify any procedures, steps, rules, processes, etc., which the employee has described.

Site Interviews

Materials

Explain to the employee that throughout the interviews, you will be gathering work-related reading materials. Make it clear that you will need originals or photocopies of materials to take with you to be used for developing training materials. Examples of materials include:

- reference manuals,
- job aids,
- instructions,
- scales, graphs, charts, tables,
- company benefit booklets,
- company insurance forms and information,
- union materials (guidelines, greivance forms, etc.)
- safety manuals,
- accident forms,
- production records, and
- time sheets, etc.

Clearance to Photograph & Record

You will need clearance (when necessary) to photograph materials that cannot be taken from the work site, for example, a sign near a machine that lists safety precautions. Ask permission to tape record or videotape during the interview. Be certain the employee being interviewed as well as affected are informed about and agree to recording, taping, etc.

Confidentiality

Employee interviews are strictly confidential. Names of employees should not be used in any way. Employee comments about supervisors, the workplace, etc., should not be divulged.

Proprietary Information

Recognize the company's interest in protecting proprietary information and agree to cooperate in any way to ensure security.

APPENDIX C

MATERIALS FOR LOW-LITERATE ADULT LEARNERS

Following are references containing bibliographies of materials for use with low-literate adt learners:

Brown, J. M., and Gerald Yuh-Sheng Chang. "Supplementary Reading Materials for Vocation Students with Limited Reading Ability." Journal of Reading, Vol. 26, November 1982, pp. 14 149.

Connett, D., and R. Rathburn. Innovative Materials for High Risk ABE Students Oregon Sta Dept. of Education, Salem, OR. June 1984.

Curriculum Materials 1979. New Jersey Vocational-Technical Curriculum Laboratory, Rutge University, 1979.

Derby, T. "Reading Instruction and Course Related Materials for Vocational High Scho Students." Journal of Reading, January 1987.

Gottlieb, S. M. Reading Materials for Vocational-Technical Students: An Annotated Bibliography. Pennsylvania State Department of Education, 1975.

Liu, C. C. Teaching Basic Skills through Vocational Education. Technical Report. Office c Vocational and Adult Education, Washington, DC. April 1980.

Nemko, B. and E. Dutton, Resources in Health Careers Programs for Teachers of Disadvantage Students. Publication Sales, California St. Dept. of Education, Sacramento, CA 95802. 1983.

O'Brien, R. L. Books for Adult New Readers. Second Revised Edition. Project Learn, 2238 Eucli Avenue, Cleveland, OH 44115. Sept. 1984.

APPENDIX D

VOCABULARY EXERCISES

Example 1

Technical Vocabulary -- Bill of Lading

Instructor will point out the important parts of the completed form. Use overhead when addressing group. Provide students with a handout that identifies the important parts on the form.

Divide form into its three parts:

1. **Top: Carrier/Billing Information**
2. **Middle: Product Description and Quantity**
3. **Bottom: Bill of Lading Summary**

1. Top: Carrier/Billing Information

Point out these sections of the form:

"Ship to:" Tells where the shipment is going.

Car/van # The warehouse clerk (WC) fills in this blank. The WC must record this number from the carrier's vehicle. This identifies the shipping vehicle.

Seal # Seal # refers to the seal on the door(s) of the carrier vehicle. Each door has a seal with a number. The warehouse clerk must record the seal number(s) in this spot on the form. There should be one seal # for each door on the vehicle.

Shipping order #: This is the number that identifies this transaction. The WC may be asked to record this number on other forms, or refer to the number whenever talking about the form with a driver or supervisor.

Student Activity

You have just finished loading an order when you get a call from your supervisor, Jan. She has some questions to ask you about the order you just filled. Write your answers to her questions in the spaces below. Use the Bill of Lading on the next page to answer these questions.

QUESTIONS:

"Hello. This is Jan. I have some questions about the shipment going to Fullerton, California. First of all, can you give me the street address where we're sending this shipment?"

1. ______________________________

"Great. Now, what shipping order number do you have on that Bill of Lading?"

2. ______________________________

"Thanks. A Couple other things. I need the Car Number and I can't read it on my copy. Can you make it out on yours? What's the Car Number?"

3. ______________________________

"I also need the Seal Number. I can only read the first number. Can you give me the rest of it?"

4. ______________________________

"One last thing and I'll let you go. What's the routing on this order?"

5. ______________________________

"Thanks for your help. See you this afternoon. Bye."

Example 1. APPENDIX D

Ship To	Ship Via Car/Van No.	Shipping Order Number
Wicker Products Company 1543 South Street BAKERSFIELD, CALIF. 92634	A-3241	74305

Sales Ord. No.	Trans.	Terms Cd.	Terr. Type	Order Date	Req. Ship Date	Price Class	Slm. Rep.	Bill To Cust.

Terr.	Ship To Cust.	Loc. Code	Shipped From	Routing	Del. Carrier
			BIGGER, W. VIRGINIA	NATIONAL TRUCKING	INTERSTATE LOADER

Zone	Block	Cust. P.O. Number	Sched. Ship Date	Rec. Loc.	Bill To Name And Address
			03 10		

Tnd	Carrier Cd.	Route Cd.	EX CD-1	EX CD-2	EX CD-3	DCC Order Rcvd Date	Comm Code	Seal No.	Master B/L No.
								020251	

Cs. Shp	Qty. Ord.	Wt./Cs.	Prod. Code	Size	Description	Full Units	Loose Case	Gross Wt.	Pk. Cd.	Remarks/Total Cs. Rcvd	Remarks/OS & D
	630	36.5	45805	12/30	POPCORN	9		22995	K		
	600	34.5	45814	8/45	POPCORN	10		20700			
				V7450							
				V76JL							

Tl. Units	Tol. Loo. Cs.	Total Cube	Control Carrier Date	Entered By	Product Hash Total	
						8951

Bill Of Lading Summary

No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.

Pg. Of	Date Shipped	Address Correspondence To Bournes/Hunt-Wesson, Inc.	Total Cases	Total Weight	Date Received

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Example 2

Matching Exercises:

(See blank shipping order form on next page with items numbered.)

Match the number of the term on the form with the best definition or explanation below.

__________ Short for Cases Shipped. Write the number of cases shipped in this column.

__________ Short for Quantity Ordered. This line will be filled out before you receive the form. In most cases, the number of cases shipped and the number of cases ordered should be the same.

__________ Stands for Weight Per Case. This will be filled out before you get the form. This tells you the weight in pounds of a case of the product.

__________ Short for Product Code. Each size jar has a different product code number. This will be filled out before you get the form. You might need this number when referring to the product code chart to find the weights of a shipment.

Example 2, APPENDIX D

Ship To

UPC MFG I.D. 27000	Shipping Order Number
D-U-NS 04-240-3158	

Ship-Via Car/Van No

Sales Ord. No.	Trans.	Terms Cd.	Terr. Type	Order Date	Req. Ship Date	Price Class F F G	Sls Rep	Bill To Cust

Terr	Ship To Cust.	Loc. Code	Shipped From	Routing	Del Carrier

Zone	Block	Cust. P.O. Number	Schd. Ship Date	Rec. Loc.	Bill To Name And Address

T/M	Carrier Cd.	Route Cd	EX CD-1	EX CD-2	EX CD-3	DCC Order Recvd Date	Comm Code	Seal No	Master B/L No

Cs. Shp	Qty. Ord.	Wt./Cs.	Prod. Code	Size Description	Full Units	Loose Case	Gross Wt.	Frt. Cd.	Remarks/Total Cas. Recd	Remarks/OS & D
1.	2.	3	4.	5.	6.	7.	8.			

Units	Tot. Loo. Cas	Total Cube	Control Center Date	Entered By	Product Hash Total	89517

Bill Of Lading Summary

No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.	No. Of Pkgs.	Frt. Code	Weight (Sub. To Corr.)	Class Or Rate	Frt. Chg.

Pg. Of	Date Shipped	Address Correspondence To Beatrice/Hunt Wesson, Inc.	Total Cases	Total Weight	Date Received

APPENDIX E

SAMPLE LESSON: Understanding Your Company's Group Insurance Plan

As a company employee you are entitled to buy insurance for yourself and your family. You may have received a booklet that tells about your insurance plan. Some people have a hard time reading insurance manuals. Words used to describe insurance policies can be hard to understand. For example, benefit is a technical word often used when talking about insurance. In everyday usage, benefit means anything good. But in the insurance language, benefit means the payment you receive for an insurance contract.

The words in the list below came from your company booklet on group insurance. Study the words below. Next to each word is its definition and another word that means about the same thing. The word that means the same is called a synonym. Each word is used in a sentence to show its meaning.

Words About Insurance

Word		Definition	Synonym
1.	**accidental**	happening by chance or accident	unexpected
[redacted]			
2.	**benefit**	money paid from an insurance contract	payment
[redacted]			
3.	**beneficiary**	the person who receives insurance benefits	receiver
[redacted]			
4.	**claim**	request for payment of insurance benefits	request
[redacted]			

Word		Definition	Synonym
5.	coverage	the type of protection provided by an insurance policy	protection

[redacted]

Word		Definition	Synonym
6.	dismember	to cut, tear or pull off a limb (such as a hand or foot)	separate

[redacted]

Word		Definition	Synonym
7.	disability	inability to work	handicap

[redacted]

Word		Definition	Synonym
8.	exclusions	what the insurance does not cover.	exceptions

[redacted]

Word		Definition	Synonym
9.	maternity	having to do with pregnancy or childbirth	pregnancy

[redacted]

PRACTICE

A synonym is a word that means almost the same thing as another word. "Cup" and "mug" are synonyms because they mean almost the same thing. "Slacks" and "trousers" are synonyms because they mean almost the same thing. Using synonyms for words you are trying to learn is a good way to remember them. Sometimes a word doesn't have a synonym and it takes a few other words to say the same thing. Talk with your husband, wife or friend about the kind of insurance you have. Use some of the new words from the list when you talk about your policy.

Exercise One: Write a definition or synonym for each word on the list below. Refer to the first part of this lesson if you need help.

Word	Synonym	Word	Synonym
1. coverage	____________	6. maternity	____________
2. accidental	____________	7. dismember	____________
3. claim	____________	8. exclusions	____________
4. benefit	____________	9. disability	____________
5. beneficiary	____________		

Check and correct your answers before you go on.

Answers: [place upside down on page or in answer key at end of module]

1. protection	6. pregnancy
2. unexpected	7. separate
3. request	8. exceptions
4. payment	9. handicap
5. receiver	

Exercise Two: Circle the correct synonym for each numbered word below:

1. **maternity**
   a. creative
   b. pregnancy
   c. payments
   d. sickness

2. **coverage**
   a. blanket
   b. benefits
   c. protection
   d. extra

3. **exclusions**
   a. inclusions
   b. expectations
   c. exceptions
   d. prevention

4. **claim**
   a. request
   b. yield
   c. sue
   d. money

5. **disability**
   a. strength
   b. handicap
   c. disturbance
   d. premium

6. **beneficiary**
   a. receiver
   b. giver
   c. exemptions
   d. expense

7. **benefit**
   a. wreck
   b. insurance
   c. payment
   d. health

8. **deductible**
   a. costly
   b. removable
   c. expensive
   d. free

9. **accidental**
   a. planned
   b. prearranged
   c. unexpected
   d. predictable

Exercise Three: Use each of these new words in a sentence of your own. Write each sentence about the type of insurance you have or would like to have. Think of ways to use these words when you talk with your friends and family.

1. **Accidental**

2. **Benefit**

3. **Beneficiary**

4. **Claim**

5. **Coverage**

6. **Dismember**

7. **Disability**

8. **Exclusions**

9. **Maternity**

These activities should be followed by a brief reading exercise that uses part of the insurance language that includes some of the terms used above. Make the assignment as "real world" as possible. For example, instead of merely asking questions which require reading, create scenarios which make the reading assignments more relevant for the learners.

Example:

You had an accident at home and now you cannot work. Your doctor says you should not go back to work for two months. Read page 9 of the insurance handbook to see how your insurance will help you while you are off work. Answer the question below:

WEEKLY ACCIDENT AND SICKNESS INSURANCE

If while insured, you become totally disabled as a result of a non-occupational injury or sickness, benefits will be payable each week while you are so disabled and under the care of a licensed physician.

Benefits will be payable beginning on the first day in case of total disability due to injury, and on the eighth day in case of total disability due to sickness; however, no benefits shall be payable for any day for which you are entitled to payment under our Company's Sick Leave Plan.

These benefits will continue for the maximum duration specified in the Schedule of Insurance for any one continuous period of disability. Successive disabilities separated by less than two weeks of full-time work will be considered one disability, unless the subsequent disability is due to a different cause and does not begin before you return to full-time work.

After your return to work, if you again become totally disabled from a different and unrelated cause, you will again be eligible for benefits to continue up to another maximum duration as described above.

In no event will benefits be payable while you are not under the care of a licensed physician.

In the event of disability due to pregnancy, benefits will be available provided pregnancy commences while you are insured.

—9—

1. When you are injured or sick and cannot come to work, you are

______________________.

2. The payments you receive from the insurance company while you are sick are called

______________________.

APPENDIX F

SAMPLE LESSON: Using a Table of Contents

Most manuals and reference booklets you use on the job have Tables of Contents. The table of contents is in the front of the manual. It lists the subjects that are covered in the manual and gives the page number where you can find each subject. The subjects are listed in the order that they appear in the manual. For example, in a car manual you might find subjects like tires, lights and fuses.

The table of contents helps you quickly find the subject you are looking for. Instead of wasting time paging through the manual, check the table of contents to find the page number of the subject you need.

Imagine that you have missed work twice and are afraid you might be fired. You could ask the supervisor what the rules are for missing, but you would rather find out without making a big deal out of it. You ask a friend who says he isn't sure. He says it's probably in the Employee Handbook sitting on the bench in the back of the lunchroom. You check the table of contents and this is what you find:

TABLE OF CONTENTS

A quick look at the Table of Contents tells you:

1. what subjects are covered in the booklet,
2. which page to turn to read about each subject, and
3. that each subject is in a different section, (A, B, C, etc.)

Now, remember that you are looking for information about missing work. "Missing Work" does not appear in the table of contents. Ask yourself, "Under which heading would I find something about missing work?" You will probably see the subject "Attendance Policy" on page 4. This appears to be the only subject listed that has anything to do with missing work. If you were to turn to page 4 of the handbook, reproduced for you on the following page, you would find the Attendance Policy.

Read page 4. Remember, you missed work and you are trying to find out if you might get fired. Even though you missed, you remember that you did call in each time to tell your supervisor that you would not be in on time.

1. Which papagraph tells what you should do if you are going to miss work? ______________

2. From what you see on page 4 can you tell if you need to be worried about your job? Why or why not? (Write your answer in the space below.)

____

____

Reading the table of contents is a good way to find out what is in a book or manual. It's a good habit to read through the table of contents of any book. You might see a subject that you hadn't thought of that might be of interest to you.

Think about the books and manuals you use on your job. Which of them have tables of contents? Make a list of some of the manuals you have at work or at home that have tables of contents.

1. ____________________ 5. ____________________

2. ____________________ 6. ____________________

3. ____________________ 7. ____________________

4. ____________________ 8. ____________________

The next time you use these books take a minute to read the table of contents.

E-9 Do not punch another employee's time card or persuade another employee to punch your time card.

E-10 Do not falsify or alter a time card.

F. ATTENDANCE POLICY

As in all types of business and industry, certain practices must occur in order to maintain maximum efficiency of operations. Your job is important, and it is very important that you are here and ready for work on time.

Various work hours apply to all employees at ORPD. Each employee shall be informed of his/her scheduled work day by your supervisor or the Personnel Office, and each employee is expected to be at work each time they are scheduled.

F-1 New employees are expected to be at work each time they are scheduled during their probationary period.

F-2 Upon reaching seniority, all employees shall follow the current year attendance policy which will be given to you upon reaching seniority. This policy can also be found posted on the bulletin board in the cafeteria.

F-3 If for some reason an employee is unable to report for work as scheduled, notification of such absence or tardiness must be reported to your supervisor or the Personnel Office as far in advance as is possible.

Subtopics

Some tables of contents list topics and subtopics. Subtopics are usually indented under the main topic heading. A quick glance will tell you the subtopics listed under each topic.

Look at the example below. This is the table of contents from your company's Pension Plan For Hourly Employees handbook.

TABLE OF CONTENTS

You might need to use your Pension Plan manual if you needed to know:

- how long your disability pension would be paid
- how your pension is affected if you get married
- what the initials ERISA stand for and what rights ERISA provides for you as an employee

This table of contents has subtopics included. Look at topic "B. Definitions." There are five subtopics under topic B. Subtopics give you a more complete idea of what is included in the manual. They make it even easier for you to find exactly the information you are looking for.

Look closely at the complete table of contents from the Pension Plan For Hourly Employees. Refer to it as you answer the questions that follow. When you finish, check your answers with the answer key at the end of this lesson.

Applying What You Know

Use the table of contents from the Pension Plan For Hourly Employees manual, on the following page, to help you find answers to the sample questions on page 5.

SAMPLE QUESTIONS

1. How many subtopics are in Section I?

2. On which page does topic "C. Cost" appear?

3. On which page could you find information about how long your disability pension would be paid?

4. If you are married, to which page would you turn for information about your pension? If you are single?

5. To which page would you turn to find information about ERISA?

Answers: [place upside down on page or in answer key at end of module]

1. 4 subtopics
2. page 2
3. page 5
4. page 3
5. pages 10 and 12

Simulation/Application Exercise

Think of two questions you have about how your pension plan works for you. Write the questions below.

1.____

2.____

Now, use your Pension Plan for Hourly Employees handbook to find the answers to your questions. Use the table of contents to help you locate the information in the handbook.

Make a note of your answers. Sometime soon, talk with a fellow worker or your spouse about your pension plan and what you have learned about it.

APPENDIX

COMPLETE TABLE OF CONTENTS

PENSION PLAN FOR HOURLY EMPLOYEES

APPENDIX G

SAMPLE LESSONS FOR DIAGRAMS AND TABLES

Lesson 1: Reading a Ceiling Fan Diagram

Diagrams are an important part of many manuals and books you read to do your job. The better you can read diagrams, the more quickly and better you will be able to find the information you need to do your job.

Imagine that your supervisor told YOU to fix the broken ceiling fan in the paint room. He gave you a diagram and the list of parts and told you to let him know what parts need to be ordered for the fan.

Attached is a diagram your supervisor gave you. It is a diagram of a ceiling fan. You would use the diagram when ordering parts to repair this ceiling fan.

Look at the box at the top of the diagram in Example 1. These headings are listed across the top:

Key No.	678 Part No.	679 Part No.	676 Part No.	684 Part No.	Description

"No." is a common abbreviation for "number". So "Key No." stands for Key Number. Each part of the ceiling fan shown in the drawing has a Key No., or a number that "keys" it to the part number and description.

For example, look at the fan part in the bottom left corner of the diagram labeled with a "1". Next, find "1" in the column under "Key No." on the parts chart. Run your finger across the chart to the "Description" column. The description for key number 1 is "Plastic Lens." The item labeled number 1 in the diagram is called a plastic lens.

Each of the other columns in the parts chart list the part numbers for the different models of ceiling fans. Look at the numbers above "Part No." in each of the columns. The numbers are 678, 679, 676, and 684. Each of these numbers is a "Model" number. There are four different types, or models of fans that are similar, but different. Beneath each model number are the part numbers for the parts that go with that model.

EXAMPLE 1

"NO." STANDS FOR NUMBER

THE NUMBERS 676, 679, 676 + 684 ARE MODEL NUMBERS.

A DASH (-) IN THE PART NUMBER COLUMN SHOWS THE PART DOES NOT GO WITH MODEL 684.

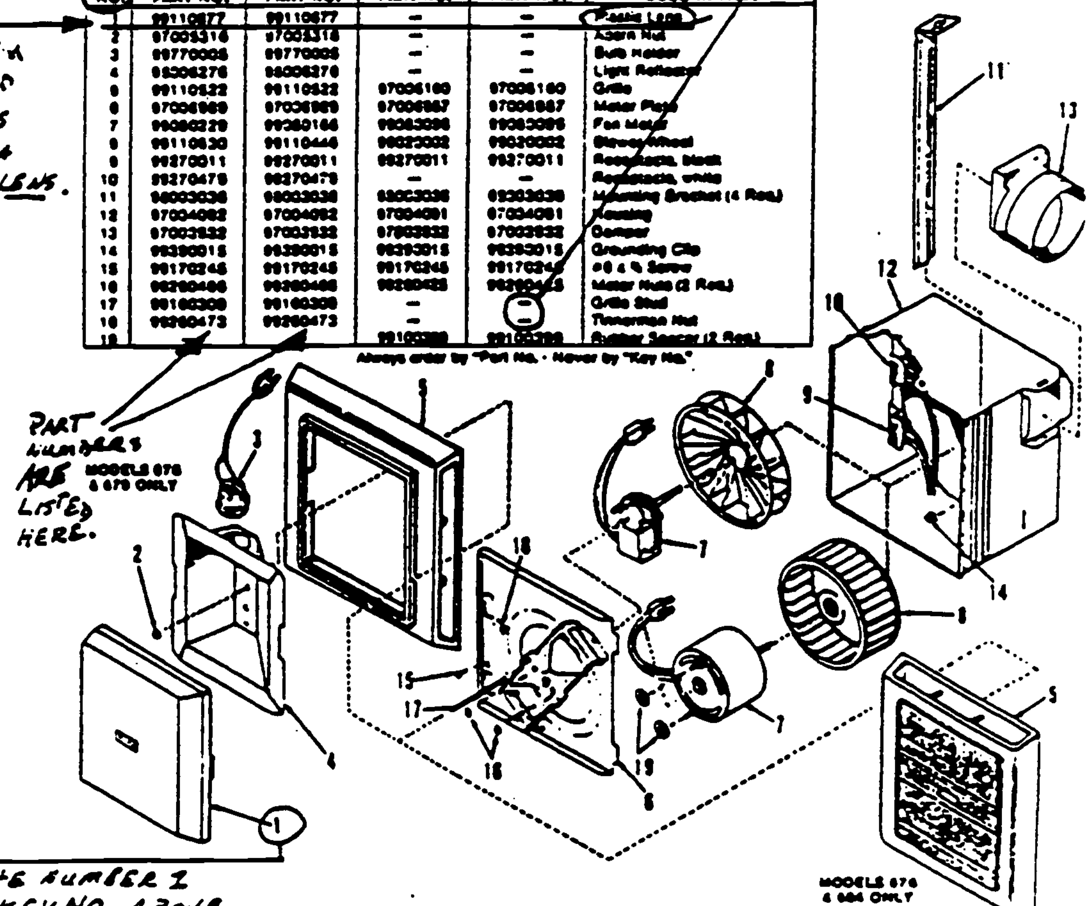
SERVICE PARTS

KEY NO.	676 PART NO.	679 PART NO.	676 PART NO.	684 PART NO.	DESCRIPTION
1	99110677	99110677	—	—	Plastic Lens
2	97003316	97003316	—	—	Acorn Nut
3	99770005	99770005	—	—	Bulb Holder
4	98006276	98006276	—	—	Light Reflector
5	99110522	99110522	97006160	97006160	Grille
6	97006969	97006969	97006967	97006967	Motor Plate
7	99080229	99360166	99083096	99083096	Fan Motor
8	99110630	99110444	99023002	99020002	Blower Wheel
9	99270011	99270011	99270011	99270011	Receptacle, black
10	99270479	99270479	—	—	Receptacle, white
11	98003036	98003036	98003036	98003036	Mounting Bracket (4 Req.)
12	97004082	97004082	97004081	97004081	Housing
13	97003532	97003532	97003632	97003632	Damper
14	99390015	99390015	99393015	99393015	Grounding Clip
15	99170245	99170245	99170245	99170245	#8 x ¾ Screw
16	99260466	99260466	99260425	99260425	Motor Nuts (2 Req.)
17	99100308	99100308	—	—	Grille Stud
18	99260473	99260473	—	—	Tinnerman Nut
19			99100399	99100399	Rubber Spacer (2 Req.)

Always order by "Part No." · Never by "Key No."

THE ITEM MARKED "NO. 1" IS CALLED A PLASTIC LENS.

PART NUMBERS ARE LISTED HERE.



MATCH THE NUMBER 1 WITH THE KEY NO. ABOVE.

For example, we know that item number 1 in the diagram is a plastic lens. Look at tl column under "678". What is the part number for the plastic lens for model 678? The part numb is 99110677. Models 678 and 679 have the same type of plastic lens. You know this because tl part numbers are the same.

Fan models 676 and 684 show a dash (-) in the part number column. This means that th part is not available for this type of fan. These two fan models don't have a light built into ther

Applying What You Know

Use the diagram and the parts chart for the ceiling fan to answer the following questio by filling in the blank or circling the correct answer.

1. The part in diagram labeled "8" is called a ______________.

2. The part labeled number 8 is used on which of the fan models?

   a. 687 only
   b. 678 only
   c. 678 and 679 only
   d. it is used on all four models

3. The part labeled 3 is called a ____________________.

4. Which models use the part labeled 3? ________________.

5. You need to order a white receptacle for ceiling fan model number 679. What part number woul you use to place your order?

____

6. In all fans, the fan motor is connected to the

   a. grille
   b. bulb holder
   c. blower wheel
   d. grounding clip

7. The damper is connected to the

   a. mounting bracket
   b. housing
   c. grille
   d. grille stud

8. Which fan models require rubber spacers? ______________

9. What is the part number for item 5 on fan model 676? ______________________

10. Notice the message under the parts box that says, "Always order by Part No. -- Never by Key No." Explain why you think this is good advice. ________________________________

____

____

Check your answers with the answer key before going on.

Answers: [place upside down on page or in answer key at end of module.]

1.	Blower wheel	6.	c
2	d	7.	b
3.	bulb holder	8.	models 676 and 684
4.	models 678 and 679	9.	97006160
5.	99270479		

10. The key number doesn't tell what type of part is needed. Many models may all use a special part like a motor, but each motor is different so the part number is needed to tell them apart.

Lesson 2: Reading an Hourly Pay Rate Table

Whether using job manuals or company policy booklets, everyone needs to know how to get information from tables and charts. A table is a good way to organize a lot of information in a small amount of space on a page. Tables are good sources of information if you know how to read them. Because information is displayed next to other information, tables can help you make comparisons.

The table below is from a page in your company policy manual. It lists the hourly pay rates by labor grade. You will notice that across the top of the table are the different hourly rates. Down the left side of the table are the different labor grades. Reading this table can tell you much of what you need to know about the pay scales in your company.

Section 3 - Hourly Pay Rates by Labor Grade

LABOR GRADE	HIRE RATE	PROB. RATE	BASE RATE	AFTER 6 MOS. REG. SERV.	AFTER 12 MOS. REG. SERV.	AFTER 18 MOS. REG. SERV.	AFTER 24 MOS. REG. SERV.
I	3.50	3.75	3.90	4.20	4.60	5.10	5.70
II	4.10	4.20	4.40	4.70	5.10	5.60	6.30
III	4.50	4.60	4.80	5.10	5.50	6.00	6.70
IV	4.80	4.90	5.10	5.40	5.80	6.30	7.00
V	6.50	6.60	6.70	6.90	7.20	7.45	7.80
VI	7.10	7.25	7.35	7.50	7.65	7.80	8.15
VII	8.10	8.25	8.35	8.50	8.65	8.80	9.15

For example, if your friend was just hired yesterday as a Labor Grade I, how much would he earn? By looking at the table, you can see that a Labor Grade I employee would earn the Hire Rate of $3.50 an hour. But if you have been on the job for over 24 months and you are a Labor Grade IV, how much would you be earning? Run your finger down the list of labor grades on the left of the table. Next, move your finger across to the column that says "AFTER 24 MOS. REG. SERV." (Months of Regular Service has been abbreviated as "Mos. Reg. Serv.".) How much would you be earning?

Use the table and the written information below it to answer the following questions.

1. What is the Base Rate for a Labor Grade I? ______________

2. What is the Probationary Rate for a Labor Grade VII? ______

3. What could you expect to earn after 6 months as a Labor Grade III? ____________________

4. What could you expect to earn after 18 months as a Labor Grade V? __________________

5. What would a Labor Grade II earn after 24 months? _________

6. At the base rate, how much more would a Labor Grade III earn than a Labor Grade I?

____

7. Who earns more, a Labor Grade I at 24 months, or a Labor Grade IV at Base Rate?

____

8. Who earns more, a Labor Grade III at 18 months, or a Labor Grade IV at 12 months?

____

9. What is the highest hourly wage paid? ____________________

10. What is the difference between the highest and lowest wages paid in your company?

____

Check your answers with the Answer Key.

Answers [place upside down on the page or in Answer key at end of module]

1. $3.90	7. Labor Grade IV at Base Rate
2. $8.25	
3. $5.10	8. Labor Grade III at 18 months
4. $7.45	
5. $6.30	9. $9.15
6. $ .90	10. $5.65

APPENDIX H

READABILITY FORMULAS

(Moore, 1987)

Readability is an index of the ease of comprehension of a written passage. Check the readability of instructional materials to ensure that you use them appropriately with the learners. Many formulas are available. Before using a particular formula, check to see that it is the best one to use given the nature of the material to be analyzed and the age of the learners. In addition, some microcomputer programs are available. These programs are faster than calculating readability formulas by hand.

Most formulas use one or more of the following factors to assess readability: average sentence length, percentage of long words, number of sentences, number of unfamiliar words, and number of polysyllabic words.

Since not all formulas will produce the same result on the same material, more than one formula should be used on each set of material (unless only a rough estimate is required).

Fog Readability Formula Characteristics

- uses the average sentence length plus the number of three or more syllable words in a 100-word passage
- tends to run a little higher than other formulas (especially on advanced material)
- how to calculate:
  - a.) Select at least three passages from the material.
  - b.) Count 100 words for each passage. (Count contractions and hyphenated words as one word. Count numbers and letters as one word.)
  - c.) Count the number of sentences.
  - d.) Calculate the average sentence length by dividing 100 by the number of sentences.
  - e.) Count the number of words that have three or more syllables. (Do not count capitalized words, combinations of short easy words [bookkeeper], or verb forms made into 3 syllables by adding -ing or -ed.)
  - f.) Add the two factors of average sentence length and number of three syllable words.
  - g.) Multiply the total obtained in (f) by 0.4. This is the approximate grade level.

SAMPLE READING PASSAGE: CALCULATING THE FORECAST

A sample reading passage, worksheet and solution follows.

From: Roth, A. C. (1981). Small Gas Engines. South Holland, IL: Goodheart-Willcox Company, Inc.

Friction is the resistance to motion created when one dry surface rubs against another. Even highly polished metal surfaces have irregularities (when studied under a microscope) that would create much friction if rubbed together. The microscopic roughness would resist movement and create heat.

As the relatively rough projections on the contact surfaces rub across each other, they eventually would break off and become loose particles. The particles, in turn, would work between the surfaces and gouge grooves in the metal. Then, as the friction and heat increases, the metal parts would expand, causing greater pressure between the surfaces and creating even greater friction. This condition of wear exists until the parts either weld themselves together or seize (expand so much that mating parts cannot move).

In some cases, the excessively worn parts lose so much material from their contact surfaces, they become too loose to function properly. When this happens, the scored part should be replaced with a new one.

Forecast Readability Formula Worksheet

1.) Number of 1-syllable words. _____

2.) #1 divided by 10 _____

3.) #2 subtracted from 20 _____

It is recommended that you sample from the beginning, middle, and end of the book or manual. You should then average the 3 to determine the readability of the total document.

Sample Passage #1 _____
Sample Passage #2 _____
Sample Passage #3 _____

Reading Level (average of 3 samples) _____

From: Roth, A. C. (1981). Small Gas Engines. South Holland, IL: Goodheart-Willcox Company, Inc.

[The one-syllable words are underlined.]

Friction is the resistance to motion created when one dry surface rubs against another. Even highly polished metal surfaces have irregularities (when studied under a microscope) that would create much friction if rubbed together. The microscopic roughness would resist movement and create heat.

As the relatively rough projections on the contact surfaces rub across each other, they eventually would break off and become loose particles. The particles, in turn, would work between the surfaces and gouge grooves in the metal. Then, as the friction and heat increases, the metal parts would expand, causing greater pressure between the surfaces and creating even greater friction. This condition of wear exists until the parts either weld themselves together or seize (expand so much that mating parts cannot move).

In some cases, the excessively worn parts lose so much material from their contact surfaces, they become too loose to function properly. When this happens, [150] the scored part should be replaced with a new one.

Forecast Readability Formula Worksheet

1.) Number of 1-syllable words.	82	
2.) #1 divided by 10	8.2	
3.) #2 subtracted from 20	11.8	[approximate readability index of this passage]

SAMPLE READING PASSAGE: CALCULATING THE FOG

From: Roth, A. C. (1981). Small Gas Engines. South Holland, IL: Goodheart-Willcox Company, Inc.

Friction is the resistance to motion created when one dry surface rubs against another. Even highly polished metal surface have irregularities (when studied under a microscope) that would create much friction if rubbed together. The microscopic roughness would resist movement and create heat.

As the relatively rough projections on the contact surfaces rub across each other, they eventually would break off and become loose particles. The particles, in turn, would work between the surfaces and gouge grooves in the metal. Then, as the friction and heat increases, the metal parts would expand, causing greater pressure between the surfaces and creating even greater friction. This condition of wear exists until the parts either weld themselves together or seize (expand so much that mating parts cannot move).

In some cases, the excessively worn parts lose so much material from their contact surfaces, they become too loose to function properly. When this happens, the scored part should be replaced with a new one.

Fog Readability Formula Worksheet

1.) Number of words in passage _____

2.) Number of sentences in passage _____

3.) Average sentence length _____

4.) Number of 3-syllable words _____

5.) Total of #3 + #4 _____

6.) #5 multiplied by 0.4 _____

It is recommended that you sample from the beginning, middle, and end of the book or manual. You should then average the 3 to determine the readability of the total document.

Sample Passage #1 _____
Sample Passage #2 _____
Sample Passage #3 _____

Reading Level (average of 3 samples) _____

FOG EXERCISE SOLUTION

From: Roth, A. C. (1981). Small Gas Engines. South Holland, IL: Goodheart-Willcox Company, Inc.

[Words having three or more syllables are underlined.]

Friction is the resistance to motion created when one dry surface rubs against another. Even highly polished metal surfaces have irregularities (when studied under a microscope) that would create much friction if rubbed together. The microscopic roughness would resist movement and create heat.

As the relatively rough projections on the contact surfaces rub across each other, they eventually would break off and become loose particles. The particles, in turn, would work between the surfaces and gouge grooves in the metal. Then, as the friction and heat increases, the metal parts would expand, causing greater pressure between the surfaces and creating [100] greater friction. This condition of wear exists until the parts either weld themselves together or seize (expand so much that mating parts cannot move).

In some cases, the excessively worn parts lose so much material from their contact surfaces, they become too loose to function properly. When this happens, the scored part should be replaced with a new one.

Fog Readability Formula Worksheet

1.) Number of words in passage	100	
2.) Number of sentences in passage	5	
3.) Average sentence length	20	
4.) Number of 3-syllable words	11	
5.) Total of #3 + #4	31	
6.) #5 multiplied by 0.4	12.40	[approximate readability index of this passage]

APPENDIX I

OTHER BASIC SKILLS SOURCES

Following are sources of basic skills programs, teaching materials, development guidelines, and occupational specific competencies.

Agency For Instructional Technology. Instructional Design for Applied Communication: A Curriculum and Learning Materials for High School Vocational Students. A Preliminary Design Report. AIT, Box A, Bloomington, IN 47402. Feb. 1987.

California State Department of Education, Sacramento, CA. Essential Living Skills. Consumer and Homemaking Education Guide to Proficiencies and Performance Indicators for the Occupation of Homemaking. Publication Sales, California Department of Education. 1984.

_____. Learning to Read and Write the Electronics Way. Publication Sales, California Department of Education. 1983.

_____. Learning to Verbally and Visually Communicate the Metalworking Way. VOICE, California Department of Education, 721 Capitol Mall, Sacramento, CA 95814. 1983.

_____. Learning to Verbally and Visually Communicate the Electronics Way. VOICE, California Department of Education, 721 Capitol Mall, Sacramento, CA 95814. 1983.

_____. Learning to Verbally and Visually Communicate the Automotive Way. VOICE, California Department of Education, 721 Capitol Mall, Sacramento, CA 95814. 1983.

Davis, B. and N. S. Woodruff, Project Trade Related Reading Packets for Disabled Readers. Final Report. New Jersey State Dept. of Education, Trenton. Division of Vocational Education and Career Preparation. 1985.

Dougherty, B. and J. Novak, (editors). Improving Basic Skills: Volume III - A Collection of Programs and Resources Selected for the Governor's Conference on Basic Skills. (Madison, Wisconsin, Dec. 1981). University of Wisconsin, Madison, Vocational Studies Center, Sept. 1982.

Fields, E. L., W. L. Hull and J. A. Sechler, "Adult Literacy: Industry-Based Training Programs." The National Center for Research in Vocational Education, The Ohio State University, 1960 Kenny Road, Columbus, OH 43210-1090. 1987.

Flanagan, W. M. "Computerized Vocational Objectives Manual and Data Bank for Students with Special Needs. A User's Manual and Comprehensive Data Bank of Over 3000 Vocational Entry and Exit Level Objectives Designed for Special Needs Learners." University of Missouri, Columbia. Department of Practical Arts and Vocational-Technical Education. Nov. 1984.

Harding, S., B. Mogford, W. H. Melching and M. Showel, "The Development of Four Job-Oriented Basic Skills (JOBS) Programs." Northrup Services Inc. Sept. 1981.

Johnson, D. E. Basic Skills for Word Processing. Office Occupations Audiovisual Package. Instructors Guide. Student Activity Packet. Texas Education Agency, Austin. Dept. of Occupational Education and Technology. 1982.

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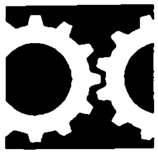
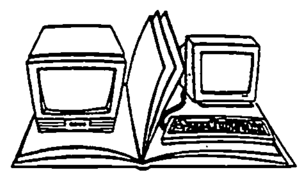


What Works? Literacy Training In The Workplace

April 13, 1995

Participant Packet



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What Works? Literacy Training in the Workplace
April 13, 1995

Videoconference Agenda

Opening

Overview of Workplace Literacy Issues

Visiting Workplace Literacy Programs: Pre-Taped Case Studies & Analysis by Panel Members
- UAW/GM Skills Center, Baltimore MD
- Food & Beverage Workers Union Local 32, Washington, DC
- United Electric Controls Company, Watertown, MA
- Massachusetts High Performance Manufacturing Consortium

Call-in/Fax-in Questions

Panel Discussion
- Workplace Skills Standards
- Professional Development for Workplace Literacy Training

Call-in/Fax-in Questions

Electronic Networking: Continuing the Dialogue

Closing

What Works? Literacy Training in the Workplace

Participant Packet Contents

Part A:

Workplace Literacy Issues

Workplace Literacy Programs: Case Studies

UAW/GM Skills Center
North American Truck Group (NATG), Baltimore MD

- Plant has 3,600 union and salaried employees
- Plant builds Astro and Safari minivans
- Program provides basic skills instruction
- Labor/management initiative
- Funded through labor contract

Skills Enhancement Training Program
Food & Beverage Workers Union Local 32, Washington, DC

- Union serves 2,000 cafeteria workers in Washington, DC area
- Workers employed by 13 Washington-area food service companies
- Program provides basic skills instruction
- Labor/management initiative
- Funded initially through National Workplace Literacy funds; now in transition and will be funded through labor contract

Basic Skills Training Program
United Electric Controls Company, Watertown, MA

- 350-person privately owned company
- Company manufactures temperature and pressure controls for pizza ovens, medical and transportation equipment, and other equipment
- Program provides ESL and "Learning to Learn" instruction
- Program funded initially through Massachusetts Workplace Literacy funds, now supported by company

Massachusetts High Performance Manufacturing Consortium

- Consortium consists of 13 non-competing manufacturing companies, from 15-1,500 employees, in the Boston area
- Formed to address broad range of training needs, including literacy
- Recently received U.S. Department of Labor funds to explore and expand range of possible collaborative activities

Workplace Literacy Programs
Issues to Be Addressed

Workplace literacy programs tend to focus primarily on instruction. Indeed, appropriate, quality instruction is at the core of effective workplace literacy programs, and in recent years we have learned a great deal about the importance of providing context-specific literacy instruction. Yet, too many providers focus their attention on instruction only and neglect other crucial issues. To be successful, workplace literacy training must take into account these other factors which are outlined below:

A. Company Background

- What company does—product, service
- Size
- Employee demographics
- Union or non-union operation
- Challenges faced by industry and organization
- Skill needs identified within workplace and workforce

B. Planning

Developing the Partnership

- Identify all necessary and/or appropriate partners
- Identify what needs and assets each brings to the partnership

Understanding the Customer(s) and Their Needs/Goals

- Identify the multiple customers and their needs
- Identify "invisible" customers and their needs —those that might not appear to be involved in the project, but in fact can impact its success or failure, e.g., front-line supervisors and managers
- Identify role of learners/potential learners in the process
- Identify purpose and goals as perceived by all stakeholders, determine compatibility of their goals
- Maintain communication with all customers

Understanding Organizational Issues

- Mission of the organization
- Relationship between management, union, and workers
- Organizational culture—traditional, transitional, or high performance organization?
- Role of, value placed on training, and specifically, literacy/basic skills training within the organization
- Relationship of skills to be learned to current and future jobs
- Connection between training, literacy training, and business goals
- Incentives for participation
- Assessing commitment to literacy training—Whose time? How financed?

C. Assessment and Instruction

Job Task and Skills Analysis

- Gather job descriptions, discuss job with workers and supervisors
- Collect work samples (if relevant)
- Observe workers doing job
- Identify skills needed
- Identify common problems, errors

Assessing skill level of learners
- How integrated into instruction?
- How use assessment information?

Assessing learner interest/motivation for learning
- Gauge learner interest and motivation
- Assess learner perception of potential benefits of learning

Identify clear instructional goals

Customize instructional materials to specific workplace context as required and appropriate

Prepare instructors for the workplace
- Determine appropriate type of instructor and specific instructor(s)
- Prepare instructor(s) for assignment
- Consider staff development for the workplace

D. Evaluation

Key evaluation issues:
- Extent to which proposed training program matches critical organizational training need
- Extent to which participating employees master content of program
- Extent to which mastery of training transfers and impacts positively on job performance
- Extent to which changed job performance results in benefit to organization

Develop evaluation plan upfront

Determine appropriate measures, indicators

How Much Workplace Literacy Training Is Occurring?

Number and percent of private nonagricultural establishments with formal training programs by size of establishments, 1993

Characteristic	Total	Less than 50 employees	50-249 employees	250 or more employees
All establishments (thousands)[1]	4,501	4,198	257	46
Total establishments that provided any formal training (thousands)	3,192	2,895	251	46
Percent of all establishments that provided any formal training	70.9	68.9	97.9	99.3
Percent [2] of all establishments with formal:				
Orientation training	31.8	28.5	74.9	92.5
Safety and health training	32.4	29.5	70.2	88.3
Apprenticeship training	18.9	17.5	35.6	51.1
Basic skills training	2.2	1.7	7.2	19.3
Workplace-related training	36.1	33.0	77.3	89.6
Job skills training	48.6	45.8	85.8	95.9
Other	4.1	3.6	10.5	17.1

[1] The sampling frame does not include establishments coming into existence after selection of the sample, therefore the survey estimates of the total number of establishments may differ from the population values.

[2] Respondents could choose more than one category.

Table from the Bureau of Labor Statistics Press Release: *BLS Reports on Employer-Provided Formal Training*. September 23, 1994. United States Department of Labor.

Workplace Education in Context: Comparing Traditional and High Performance Work Organizations

Traditional Organization	High Performance Organization
View of Production Process	**View of Production Process**
Emphasis on large-lot manufacturing.	Emphasis on customization.
Build inventory.	Build to order.
5-10 year period from research/product development to introduction of new product.	Shorten turn around times.
Infrequent new product introduction.	More frequent new product introduction; more product variety.
Focus on ultimate customer.	Focus on chain of customers (each worker produces for next station on line).
Scientific management approach (Taylorism): Goal is to break complex jobs into simple rote tasks which worker can repeat with machine-like efficiency.	Continuous improvement approach: Goal is to involve every member of workforce in process of improving quality, efficiency and customer satisfaction.
Emphasis on cutting costs.	Emphasis on growth in productivity.
Major mechanism for impacting productivity: add subtract hours; speed-up for more work/hr.	Major mechanism for impacting productivity: no rework for more work/hr.
	Emphasis on elimination of waste through overproduction, storage, transportation, waiting, defects, motion, unnecessary processing.
View of Work Organization	**View of Work Organization**
Chain of command hierarchy.	Participatory management style.
Multiple levels of management necessary.	Fewer layers of management.
Management functions to control workers, maintain status quo.	Management functions as "coach."
Management treats employees as "hands."	Management treats workers as "partners in prosperity," people with solutions who deserve respect.
Worker is not a whole person (check your brain at the door).	Worker is whole person (head and hands).

View of Organization (continued)

Work performed on line, by individuals working on task alone.

Worker's job is to follow same procedures at an established pace.

Emphasis on repetition.

Premium on worker reliability, steadiness, willingness to follow directions.

Workers expendable, interchangeable.

Cost = driving factor, therefore workers fear that improvements will lead to elimination of jobs.

Role of Workplace Education

Company does not have long term strategy that integrates education and training into overall business plan.

Company distinguishes between education and training for management and line workers.

Goals for education and training are short-term, problem-centered (let's fix it!).

Return on Investment (ROI) for plant is long term; for education, short term.

Workplace Education is preparation for action.

Workplace education is remedial; focuses on filling gaps in workers ability to perform job-specific skills.

Presumed conflict between education and production (workers not given time release for participation).

View of Organization (continued)

Work done in self-managing work cells, by individuals working in teams.

Worker's job is to continuously improve his/her part of the process in relation to the whole; to better meet needs of customer (next step in production process).

Emphasis on problem-solving.

Premium on worker inventing new ways to eliminate waste, do job more efficiently.

Workers respected as equals w/ managers, valued according to contributions.

Improvement = driving factor, therefore workers rewarded for improvements.

Role of Workplace Education

Education and training conceived as part of long term strategic plan for continuous improvement.

Company puts a premium on "developing and realizing the full potential of the entire workforce."

Goals for education are long-range as well as short term (remedial plus).

ROI for education is long term.

Workplace Education is Action.

Workplace education is more than remedial; focuses on building skills for continuous improvement and flexibility (cross-training) as well as job specific skills (education model).

No conflict perceived between production and education (education takes place on work time).

Development and Implementation of Workplace Education Program	**Development and Implementation of Workplace Education Program**
Top management not invested in goals and outcomes of workplace ed program.	Top management invested in setting goals and outcomes for workplace ed program.
Neither workers, supervisors, or unions involved in process of planning, implementing and evaluating workplace ed program.	Participatory planning, implementation and evaluation process involving management, workers, union (where appropriate) and educators.
Decisions on what and who to teach are based on audit of job task specific deficits.	Decisions on what and who to teach are based on company-wide continuous improvement goals and needs defined by specific work cells.
Testing is separate from instruction.	Testing is integrated into instruction.
Content of instruction tends to be narrowly job specific (split between individual as worker and learner).	Basic skills taught within framework that focuses on continuous improvement skills.
Efforts to measure outcomes tend to be (1) self-reflective (focused on educational gains) and (2) insofar as focused on performance, look at short term job-specific skill gains.	Company develops approach to measuring outcomes that focuses on impact on individual worker performance and on organizational goals.
No plans for institutionalization of program.	Company has plans not only for institutionalization but also for better integration of education into on-the-job practices.

Developed by Sondra Stein and Laura Sperazi. Taken from K. O. Haigler & S. G. Stein (1992), *Workplace Literacy Training in Modernizing Manufacturing* (ISBN 1-55877-169-7). Washington, DC: National Governors Association.

The Secretary's Commission on Achieving Necessary Skills—Summary of the SCANS Report

Since 1991, the U.S. Department of Labor has issued several reports of the Secretary's Commission on Achieving the Necessary Skills (SCANS). These documents examine the demands of high-performance workplaces and the needed levels of proficiency in different skills areas, and they highlight the implications of workplace requirements for educators, schools, and teaching practices. The SCANS commission has conducted extensive interviews with employers, trainers, and workers from various industries. The commission also studied the perspectives of schools and educators before issuing its recommendations.

The Five Workplace Competencies

To prepare workers for the workplace, the SCANS reports focus on "generic" duties or tasks (called "competencies") that workers will have to actually perform in most jobs, rather than on technical preparation for specific occupations. It places these competencies in the following categories.

Resources. Time (allocate time, and prepare and follow schedules), money (prepare budgets, make forecasts, keep records, monitor expenses), materials and facilities (acquire, store, allocate, and use materials, supplies, or space efficiently), and human resources (distribute work and schedule activities according to known tasks and assessment of people's skills).

Interpersonal. Contribute to group effort as a member of a team; teach others new skills; work to satisfy customers' expectations; communicate ideas to justify position or to persuade; responsibly challenge existing procedures and policies; negotiate exchange of resources, resolve divergent interests; and work well with men and women from diverse backgrounds.

Information. Acquire, use, organize, and maintain information; interpret and communicate information; use computers to process information.

Systems. Understand how social, organizational, and technological systems work, and operate effectively within them. Monitor performance, correct problems, and predict impacts on system operations. Suggest modifications to improve system performance.

Technology. Work with a variety of technologies. Choose procedures, tools, or equipment, including computers, and apply to tasks. Understand overall intent and proper procedures for setup, operation, maintenance, and troubleshooting of equipment, computers, and other technologies.

A Three-Part Foundation Enabling Workplace Competencies to Develop

The SCANS Commission states that students leaving a school or education program should be able to demonstrate certain foundation skills at the following level:

Basic Skills. Read and write well enough to handle records, memoranda, and correspondence without difficulty; locate, understand, and interpret written information; and communicate ideas clearly and concisely in writing, using prose and visual displays (e.g., charts) as required.

Understand mathematics well enough to make simple computations, estimate results, interpret and develop diagrams and charts, approach practical problems by choosing appropriately from a variety of mathematical techniques, work with computer programs, apply mathematics in real-world situations, and understand the role of chance in the occurrence of events.

Speak clearly and persuasively as the job requires—respond to complaints, make group presentations, and ask questions when instructions are unclear or if competing job requirements are ambiguous.

Listen carefully to understand messages, to benefit from time spent in training, and to pick up the motivations and hidden messages of customers, clients, coworkers, or supervisors.

Thinking Skills. Think creatively, make decisions (specify goals and constraints, generate alternatives, consider risks, and evaluate and choose best alternative). Recognize problems and devise and implement plans of action. Organize and process symbols, pictures, graphs, objects, and other information in the "mind's eye." Know how to learn. Reason by discovering rules or principles underlying the relationship between objects and apply these rules when solving a problem.

Personal Qualities. Display responsibility and perseverance; maintain self-esteem; display sociability, adaptability, and politeness in group settings. Assess self accurately, set personal goals, monitor progress, and exhibit self-control. Demonstrate integrity and choose ethical courses of action.

Educational Implications

The SCANS commission believes, after examining the findings of cognitive science, that the most effective way to teach skills is in context and suggests the following three principles to guide real contextual learning in all schools and programs:

- Students do not need to learn basic skills before they learn problem-solving skills. The two go together. They are not sequential, but mutually reinforcing.
- Learning should be reinforced away from mere mastery of information and toward encouraging students to recognize and solve problems.
- Foundation skills and workplace know-how cannot be taught in isolation; students need practice in the application of these skills.

If we expect learners to develop integrative skills or to function in systems (comprised of people, equipment, timelines, regulations, administrative functions, goals, etc.), we should create in the classroom the situations or simulations that require integration of skills, rather than application of isolated, single skills (as when students practice on a worksheet). This is necessary to enable learners to develop the transferable, generic skills that they will be able to apply in most jobs, regardless of their particular content. Thus, individual classroom work needs to be supplemented by increasingly more complex projects involving extended group efforts and aiming at realistic products (e.g., reports, presentations, decisions) that are more complex than brief right-or-wrong answers.

The foundation skills should be assessed along with the workplace competencies that they support. If the students can demonstrate the competency properly, they can be assumed to have the foundation they need. (Notice that the opposite is not true. Students may develop specific mathematical skills, but they may have trouble applying them to new problems.) Choosing between teaching the foundation (e.g., back to basics) and the competencies is false; students usually become more proficient faster if they learn these areas simultaneously and if learning in order *to know* is not separated from learning in order *to do*. Knowledge and its uses belong together.

Skills Standards for the Workplace

Just as there is a movement in K-12 education to develop standards about what students need to know and be able to do, there is a parallel movement to develop skills standards for the workplace as part of achieving Goals 2000. What does this mean to adult educators? What impact will it have in the future?

Skills standards are an attempt to define the specific skills needed for particular arenas as well as to define the outcomes of good instruction. By defining the outcomes, educators can plan instruction so that it leads to the achievement of those outcomes. Skills standards also help students see what they need to know and be able to do as they participate in various levels of adult education programs. If certification is tied to accomplishment of skills standards, then students have certified portable skills that they can take anywhere in the country. Employers can set job expectations for new or advancing employees based on the skills standards certificates.

The skills standards movement calls for the establishment of voluntary industry skills standards that will inform workers as well as companies about the skills requirements for various occupational clusters. The U.S. Departments of Education and Labor are currently funding industry associations and others to determine the skills needed to work in such industries as advanced manufacturing, electronics, hazardous materials, printing, and retail. Simultaneously, the Department of Labor is supporting the revision of the Dictionary of Occupational Titles through research with job incumbents and others to determine the skills needed for various jobs. All of these efforts include the identification of basic skills needed for the workplace and grow out of the original SCANS effort, which created a framework for workplace skills.

The National Institute for Literacy is also addressing the issue of skills standards in cooperation with the National Workforce Assistance Collaborative of the National Alliance of Business through a project funded by the U.S. Department of Labor. Through this project, curricula created as part of the National Workplace Literacy Program (NWLP) are being reviewed to determine the basic skills that are most frequently taught in various workplaces, especially those adopting high performance work patterns. Draft standards will be developed for those basic skills occurring most frequently—they will be anchored with examples from the curricula. Information will also be gathered on the various efforts related to setting standards for basic skills in the workplace.

How can these basic skills standards for the workplace be useful to adult educators? The NWLP curricula have been developed from literacy task analyses of diverse workplaces. If the same basic skills are taught, but in contextually different ways, these skills should have priority for instruction. These skills will be identified and described as part of the skills standards project at the National Institute for Literacy.

For more information on the Occupational Skills Standards projects, contact:
Skills Standards Team, U.S. Department of Labor
(202) 208-7018 or (202) 219-8660

For more information on the Workplace Literacy Skills Standards Project, contact:

Eunice Askov
National Institute for Literacy
202-632-1500
or
Institute for the Study of Adult Literacy
Penn State University

Part B:

Workplace Literacy Resources

Annotated Bibliography of Selected Resources for Workplace Literacy

Information Analysis/Synthesis

Delker, P. V. (1990, January). *Basic Skills Education in Business and Industry: Factors for Success or Failure. Contractor Report*. Washington, DC: Office of Technology Assessment. (ERIC Document Reproduction Service No. ED 337 587)

Developed as a background paper for OTA's report, *Worker Training: Competing in the New International Economy,* this review of workplace basic skills research and practice identifies factors contributing to program success or failure.

Forlizzi, L. A. (1989). *Adult Literacy in the United States Today.* University Park: Pennsylvania State University, Institute for the Study of Adult Literacy. (ERIC Document Reproduction Service No. ED 317 757)

Addresses issues related to the problem that many U.S. citizens do not have literacy skills adequate to meet their needs and ambitions. In addition to an overview of the problem, it highlights the types of literacy services and available providers.

Mikulecky, L. (1990, May). Basic Skills Impediments to Communication Between Management and Hourly Employees. *Management Communication Quarterly 3*(4).

Examines increased print communication demands in business organizations and identifies three employee needs: (a) long-term support to move from low literacy to productive skill levels, (b) basic skills training integrated with regular job training, and (c) short-term targeted training or access to redesigned documents and job performance aids.

Office of Technology Assessment. (1990). *Worker Training: Competing in the New International Economy.* Washington, DC: Government Printing Office. (ERIC Document Reproduction Service No. ED 326 622)

The chapter "Basic Skills and the Workplace," drawn largely from Paul Delker's background paper, describes workplace basic skills demands and provides an overview of workplace-oriented programs. It concludes with some implications for policy.

Secretary of Labor's Commission on Achieving the Necessary Skills (SCANS). Washington, DC: Department of Labor.
[Contact the Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9329, phone 202-783-3238, and indicate the order numbers listed below.]

1. *What work requires of schools.* (1991). (90 pages) Order No. 029-000-00433-1
2. *Learning a living, part 1.* (1992). (90 pages) Order No. 029-000-00439-1
3. *Learning a living, full report.* (1992). Order No. 029-000-00440-4
4. *Lo que trabajo necesita de las escuelas.* (90 pages) Order No. 029-000-00441-2
5. *Skills and tasks for jobs.* Order No. 029-000-00437-4
6. *Teaching the SCANS competencies.*(1993). Order No. 029-000-00438-2

The SCANS reports provide an overview of all skills needed in high-performance workplaces. The basic premise of SCANS is that certain competencies and foundation skills underly effective performance across all occupations. The reports are all highly readable, contain concrete examples for workplace activities, and are an excellent introduction for anyone who seeks to improve the quality of their workplace and their workforce. #1 and #2 serve as a foundation for the other reports.

Critical Perspectives

AFL-CIO Committee on the Evolution of Work. (1994, February). *The New American Workplace: A Labor Perspective* (Publication No. R-257-0594-20). Washington, DC: AFL-CIO.

Describes the old system of work organization and its failures and outlines the role unions have played historically in seeking to change that system. Articulates in detail Labor's vision of a model work system and the type of labor-management partnerships required to create and sustain such systems. Also discussed are the obstacles to such change and the role that labor unions and the AFL-CIO can play in stimulating new systems of work organization.

Commission on the Skills of the American Workforce. (1990). *America's Choice: High Skills or Low Wages!* Rochester, NY: National Center on Education and the Economy. (ERIC Document Reproduction Service No. ED 323 297)

Reports on the slow growth of U.S. productivity by examining employers' perceptions of skill shortages as well as how individuals are prepared for the workforce. Includes a series of recommendations for achieving a workplace that requires high skills.

Hull, G. (1991, November). *Hearing Other Voices: A Critical Assessment of Popular Views of Literacy and Work.* Berkeley: University of California, National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. ED 338 865)

Analyzes the popular, dominant myths of literacy and work and presents alternative points of view and critical reassessments.

Jurmo, P. (1991). *Good News and Bad News about Workplace Literacy Efforts in the United States.* Keynote address presented at the Job Training Partnership Act Workplace Literacy Forum, San Antonio, Texas, May 3, 1991. (ERIC Document Reproduction Service No. ED 340 845)

Examines good news and bad news in the six areas of workplace literacy efforts: awareness, curriculum development, collaboration, staff training, research and evaluation, and funding.

MDC, Inc. (1992). *Greater Expectations - The South's Workforce is the South's Future.* Chapel Hill, NC: Author.

A quantitative and qualitative regional analysis of (a) demographic trends affecting the growth and composition of the workforce; (b) characteristics of the workforce; (c) current characteristics and projected growth of industry and occupational demand; and (d) current public and private sector initiatives and resources for training, retraining, and upgrading.

Reich, R. (1991). *The Work of Nations: Preparing Ourselves for 21st Century Capitalism.* New York: Vintage Books.

We are living through a transformation that will rearrange the politics and economics of the coming century. There will no longer be national economies, at least as we have come to understand them. Each nation's primary assets will be its citizens' skills and insights. As borders become ever more meaningless in economic terms, those citizens best positioned to thrive in the world market will be tempted to disregard national allegiance. This book describes this economic transformation, and the stark political challenge it presents.

Roberts, M., & Wozniak, R. (1994, September). *Labor's Key Role in Workplace Training* (Publication No. O-263-0994-5). Washington, DC: AFL-CIO.

This report presents a sample of union-management programs that highlight the wide range of training and education available to union members. Well-planned, innovative and carefully designed joint training, education, and employee development strategies can improve labor-management relations and workplace morale, raise productivity, and strengthen employment security and mobility for workers by equipping them with a wide range of transferable job skills. The programs in this report stand out as positive examples of union-management interaction.

Silvanik, R. A. (Ed.). (1990). *Meeting the Goal of a Literate America: The State Response. State Policy Reports.* Washington, DC: Center for Policy Research, National Governors Association. (ERIC Document Reproduction Service No. ED 339 921)

Contains 10 articles, written by national and state leaders in the adult literacy field, that pose challenges confronting the adult literacy system. Several of the articles (for example, "Nine Points About Organized Labor's Participation in the State Workplace Literacy Initiatives" by Sarmiento) have implications for workplace literacy.

U.S. Departments of Education and Labor. (1988). *The Bottom Line: Basic Skills in the Workplace.* Washington DC: Department of Labor, Office of Public Information, Employment and Training Administration.

Research: Literacy Requirements of the Workplace

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1990). *Workplace Basics: The Essential Skills Employers Want.* San Francisco: Jossey-Bass. (ERIC Document Reproduction Service No. ED 319 979)

A study conducted by the American Society for Training and Development (ASTD) with funding from the U.S. Department of Labor (DOL) that responded to the question: What do employers want? This book provides an in-depth understanding of a comprehensive list of 16 skills that employers believe are workplace basics.

Haigler, K. O., & Stein, S. G. (1992). *Workplace Literacy Training in Modernizing Manufacturing Environments* (ISBN 1-55877-169-7). Washington, DC: National Governors' Association.

This report is an attempt to refine and extend the discussion of the connection between the "globally competitive workforce" and the skills needed by a "globally competitive" worker. Specific examples are drawn from companies in which such debates are matters of economic survival, not academic exercises. The case studies demonstrate that workplace education programs that support modernization efforts are dynamic, not static. While initial program goals may mirror those of more traditional, school-based approaches, over time programs tend to be more driven by the modernization strategies themselves and learning tends to reflect the vocabulary and skills used on the job.

Passmore, D. L., Garcia T., Silvis, B. L., & Mohamed, D. A. (1990). *Requirements for Workplace Literacy: An Interindustry Model.* University Park: University of Pennsylvania, Department of Vocational and Industrial Education. (ERIC Document Reproduction Service No. ED 327 643)

Demonstrates analytical methods for relating the production and consumption of goods and services in an economy to the requirements for literacy among its workers. Uses an economic model developed by Economist Wassily Leontief, called the interindustry model, to expose the links between production, consumption, employment, and literacy.

Perkins, D. N., & Solomon, G. (1989). Are Cognitive Skills Context-Bound? *Educational Researcher, 18,* 16-25.

Provides an historical overview of the two camps of instructional theory: specialized domain knowledge and general strategic knowledge. The authors suggest that there is an important interaction between both types of instruction that leads to effective results.

Research: Program Development and Implementation

Bassi, L. J. (1992). *Smart Workers, Smart Work - A Survey of Small Businesses on Workplace Education and Reorganization of Work.* Washington, DC: The Southport Institute for Policy Analysis.

A survey of 72 small businesses focusing on their plans for making changes or implementation of changes in the area of workplace education and work reorganization.

Gowen, S. G. (1992). *The Politics of Workplace Literacy: A Case Study.* New York: Teachers College Press.

This ethnographic study, based on the author's dissertation, uses worker perspectives to examine the effectiveness of a functional context approach to workplace literacy training. Proposes adopting a model that would acknowledge differences in perspectives about the purposes of workplace literacy and incorporate legitimate employee needs and concerns into the curriculum.

Kutner, M., Sherman, R. Z., Webb, L., & Fisher, C. J. (1991, May). *A Review of the National Workplace Literacy Program* . Washington, DC: Pelavin Associates. (ERIC Document Reproduction Service No. ED 333 199)

Reports on the results of a study of projects funded during the first year of operation of the National Workplace Literacy Program. A review of research literature, analysis of data from 29 sites, and site visits to six projects provided data for the study. Includes recommendations to improve program effectiveness.

Mikulecky, L., & Lloyd, P. (1992, July). *Evaluating the Impact of Workplace Literacy Programs. Results and Instruments from the NCAL Workplace Literacy Impact Project.* Bloomington: Indiana University-Bloomington, School of Education. (ERIC Document Reproduction Service No. ED 348 579)

Reports on the results of a National Center on Adult Literacy study designed to develop an impact assessment model for workplace literacy programs and to produce data on the impact of programs at two sites. A secondary goal was to refine the model for use at other sites. In addition to the model, the report includes sample forms and instructions for custom designing evaluation materials.

Mikulecky, L., & Lloyd, P. (1993, March). *The Impact of Workplace Literacy Programs: A New Model for Evaluating the Impact of Workplace Literacy Programs* (TR93-02). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Examines parallel studies of two workplace literacy programs in order to (a) develop an impact assessment model for workplace literacy programs and (b) produce data on the impact of the two quite different programs in the areas of learner gains, workplace improvements, and literacy-related changes in learners' families.

Research: Other

Chisman, F. (1992). *The Missing Link: Workplace Education in Small Business.* Washington, DC: The Southport Institute for Policy Analysis.

Details the results of a 2-year study designed to reveal what small businesses are doing to upgrade their workers' basic skills and the factors and barriers that account for their action or inaction in this area. Data were collected through a combination of mail and telephone surveys of small and medium-sized firms and case studies.

Hirsch, D., & Wagner, D. A. (Eds.). (1993, September). *What Makes Workers Learn: The Role of Incentives in Workplace Education and Training* (IP93-03). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Contributes up-to-date international information on how to enhance worker satisfaction and productivity through training and education programs and suggests that effective adult learning programs must be a genuinely collaborative activity between employer and employee.

Kaplan, D., & Venezky, R. L. (1993, September). *What Can Employers Assume About the Literacy Skills of GED Graduates?* (TR93-05). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

A subsample of 1,012 young adults, ranging in age from 21 to 25 years, was selected from the Young Adult Literacy Survey and extensively studied. The results show that relatively large and reliable differences in literacy skills exist between those who obtain a GED diploma and those who drop out of high school and do not study for or pass the GED Tests.

Merrifield, J., Norris, L, & White. L. (1991). *"I'm Not a Quitter!" Job Training and Basic Education for Women Textile Workers.* Knoxville: University of Tennessee, Center for Literacy Studies. (ERIC Document Reproduction Service No. ED 343 012)

A case history of one group of women workers who, after losing their jobs in 1988 when a major apparel manufacturer closed a plant, took part in some aspect of the Job Training Partnership Act training program following the closing. Includes a series of recommendations.

Wikelund, K. R. (1993, November). *Motivations for Learning: Voices of Women Welfare Reform Participants* (TR93-10). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Documents the experiences of a group of female welfare recipients (who have been required to "go back to school" as part of the national welfare reform movement) and identifies self-esteem and perceived opportunity structure as motivational keys for participation in adult literacy education and training.

Evaluation and Assessment

Askov, E. N. (1993). Approaches to Assessment in Workplace Literacy Programs: Meeting the Needs of All the Clients. *Journal of Reading, 36*(7).

Describes how to include the perspectives of all stakeholders (learners, union partners, management, provider organizations) in assessment of workplace literacy programs. Also describes other considerations for the instructor.

Jurmo, P. (1992, March). *A Team Approach to Evaluation and Planning: A Handbook for Workplace Educators in a Changing World. Pilot Edition.* Jersey City, NJ: Literacy Partnerships.

This handbook proposes a collaborative, team approach to evaluating workplace literacy programs with the goal of enabling programs to accomplish two important objectives: (a) getting information that they need to improve themselves and gain support from sources of funding and other resources and (b) establishing a planning and communication vehicle through which the host institution can transform itself into a high-performance work organization.

Jurmo, P. (1993). *Who Wants What Information—and How Do We Get It? Issues in Workplace Education Evaluation.* Jersey City, NJ: Literacy Partnerships. [Available through DAEL Clearinghouse: BI-50]

Guide to the presentation made at the Texas Workforce Literacy Conference in May 1993, Dallas, TX. In easy to understand language, reviews the following topics: who wants to know what for what purpose in workplace literacy evaluations, what are the goals of workplace education and the indicators of progress toward these goals, and what we can do to improve how we use workplace literacy evaluations.

Manly, D. (1993). *Workplace Education Evaluation Design Checklist.* Madison, WI: Center on Education and Work, University of Wisconsin.

An excellent tool to aid in developing, evaluating, and enhancing workplace education. The checklist may be used to determine the nature of recommended program components, program effectiveness measures, and tools for use in the evaluation process. Author suggests that checklist be completed by all members of the evaluation team, including management, labor, and education.

Philippi, J. W. (1992). *How Do You Know If It's Working? Evaluating the Effectiveness of Workplace Literacy Programs.* Springfield, VA: Performance Plus Learning Consultants, Inc. [Available through DAEL Clearinghouse: BI-44]

Examines the underlying reasons for the existence of this new field of workplace literacy. Includes: Why literacy programs are in the workplace, the relationship between training in literacy skills and performance of job tasks, the purposes of program evaluation, defining evaluation, and evaluation strategies.

Sticht, T. (1991, April). *Evaluating National Workplace Literacy Programs.* El Cajon, CA: Applied Behavioral and Cognitive Sciences, Inc. (ERIC Document Reproduction Service No. ED 334 431)

A discussion of evaluation aimed at helping workplace literacy programs meet the requirements of the rules and regulations governing the National Workplace Literacy Program. The process outlined should also help program operators more effectively design, develop, implement, operate, and improve workplace literacy programs.

Guidelines for Program Development

Askov, E. N., & Van Horn, B. H. (1993). Adult Education and Workplace Literacy: Designing Customized Basic Skills Instruction. *Adult Basic Education, 3*(2).

This article provides suggestions for adult educators that can be used in designing customized basic skills instruction using work-related reading materials.

Carnevale, A. P., Gainer, L. J., & Meltzer, A. S. (1990). *Workplace Basics Training Manual.* San Francisco: Jossey-Bass.

Produced as a part of the American Society for Training and Development-Department of Labor study, this manual includes step-by-step instructions for establishing and implementing a program to teach the basic skills necessary in the workplace, using the applied approach that links learning to improved job performance. Seven steps of program development are contained in the guide, which is filled with sample forms and checklists and includes lists of recommended readings.

Mikulecky, L., Henard, D., & Lloyd, P. (1992). *A Guidebook for Developing Workplace Literacy Programs.* Indianapolis: Indiana Government Center, Office of Workforce Development; Bloomington: Indiana University, School of Education. (ERIC Document Reproduction Service No. ED 348 580)

Based on the experiences of Indiana's Model Workplace Literacy Program, this guide presents a strategy for developing workplace literacy training programs for state employees. It includes descriptions and samples of assessment methods, task analyses, instructional courses and materials, recruitment strategies, evaluation tools, and tips for effective program operation.

Philippi, J. (1991). *Literacy at Work: The Workbook for Program Developers.* New York: Simon and Schuster.

Offers detailed instructions for building a workplace education program to meet the literacy skill application training needs of employers and employees. The book includes a step-by-step demonstration of procedures and techniques and a variety of exercises designed to help the program developer create a useful plan for implementing a workplace program.

Rush T., Moe, A., & Storlie, R. (1986). *Occupational Literacy.* Newark, DE: International Reading Association.

Provides an overview of the types of reading, writing, and oral language adults face during training and on the job for ten different occupations: account clerk, auto mechanic, draftsman, electrician, heating/air conditioning mechanic, licensed practical nurse, machine tool operator, secretary, and welder.

Sarmiento, A., & Kay, A. (1990). *Worker-Centered Learning: A Union Guide to Workplace Literacy.* Washington, DC: Human Resource Development Institute, AFL-CIO. (ERIC Document Reproduction Service No. ED 338 863)

This guide describes several union-sponsored workplace education programs and how a union can plan and operate a worker-centered literacy program. Includes information on outside funding sources, useful books and articles, and a listing of the labor organizations whose programs are mentioned in the guide.

Taylor, M. C., Lewe, G. R., & Draper, J. A. *Basic Skills for the Workplace.* Toronto: Culture Concepts, 1991. (ERIC Document Reproduction Service No. ED 333 180)

A practitioner's guide to developing literacy training programs for workers that contains 28 chapters divided into four parts: understanding the need for workplace literacy, identifying workplace training needs, examples of practice in workplace basic skills training, and discovering approaches for program development.

U.S. Department of Education. (1992, November). *Workplace Education: Voices From the Field.* Washington, DC: Division of Adult Education and Literacy, Office of Vocational and Adult Education.

These proceedings of the National Workplace Literacy Program Project Directors Meeting held in September 1991 contain project directors' insights about workplace literacy program development in a number of areas, including partnership development, curriculum development, recruitment, staff development, and assessment and evaluation.

Program Descriptions

Barnett, L. (Ed.). (1991). *Rural Workplace Literacy: Community College Partnerships.* Washington, DC: American Association of Community and Junior Colleges. (ERIC Document Reproduction Service No. ED 338 300)

Contains descriptions of 10 grants funded as a part of the American Association of Community and Junior Colleges' national workplace literacy demonstration project, designed to raise awareness of the link between local economic development and basic workplace skill performance and to stimulate a local leadership initiative around a community-wide effort to raise worker performance levels.

Chisman, F. P., et al. (1992). *Ahead of the Curve: Basic Skills Programs in Four Exceptional Firms.* Washington DC: The Southport Institute for Policy Analysis.

Radencich, M. C. (1994). *Adult Literacy: A Compendium of Articles from the Journal of Reading* (Technology: pp. 163-200. Workplace Literacy: pp. 261-281). Newark, DE: International Reading Association.

This book is a collection of over 50 *Journal of Reading* articles from 1975 to 1994 which address adult literacy. Two sections of the collection of special interest are *Technology*, and *Workplace Literacy.* Articles in the workplace literacy section include program descriptions as well as advice on setting up programs and custom-designing instruction.

U.S. Department of Education. (1992, May). *Workplace Literacy: Reshaping the American Workforce.* Washington, DC: Division of Adult Education and Literacy, Office of Vocational and Adult Education. (ERIC Document Reproduction Service No. ED 347 354)

Traces the National Workplace Literacy Program as it has been implemented over the first three funding cycles, identifies best practices, and discusses common barriers to success. Descriptions of five projects considered to be exemplary are included.

Databases, Resource Directories

Imel, S., & Kerka, S. (1992). *Workplace literacy: A guide to the literature and resources.* Columbus, OH: ERIC Clearinghouse on Adult, Career, and Vocational Education.

A thorough guide to resources in workplace literacy. Provides an overview of issues and trends related to workplace literacy; hints for locating resources, references, and materials; annotated bibliography of resources and references; resource organizations; and ERIC information. Also includes ERIC Document numbers of National Workplace Literacy Programs funded during the first three cycles.

Carman, P., & Askov, E. N. *Workplace Literacy: An Annotated Bibliography of Print Resources.* University Park, PA: Pennsylvania State University, Institute for the Study of Adult Literacy.

This bibliography is designed as a resource for service providers and small and mid-sized companies seeking assistance on all aspects of workplace literacy programs. It contains over 320 annotated entries listed in the style suggested by the American Psychological Association (APA).

Hopey, C., Rethemeyer, R. K., Schneier, J., Donohoe, A., & Ciggs, C. (draft). *NCAL Software Database: Introduction, Information, and Indices.* Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Literacy Technology Laboratory. (1994). *National Center on Adult Literacy Software Database* (Internet Gopher version 2.0). Philadelphia: University of Pennsylvania, National Center on Adult Literacy. Available Gopher: litserver.literacy.upenn.edu. Directory: F. Adult Literacy Commercial Software Database/C. Diskette file: Diskette Database.

Literacy Technology Laboratory. (1994). National Center on Adult Literacy Software Database (Version 1.0 & 2.0) [Computer Program]. Philadelphia: University of Pennsylvania, National Center on Adult Literacy [Producer and Distributor].

The Literacy Technology Laboratory (LTL) at the National Center on Adult Literacy (NCAL) has compiled a database of adult literacy software products. This document is available as a hardcopy or on disk as a stand-alone program which will run on computers using the Microsoft Windows™ or Apple Macintosh™ operating system. A fully searchable version of the technology database is available through NCAL's Internet Gopher server. From this Gopher, you may also recover free demonstration copies of some of the software listed in this document.

The software included in this database was donated by vendors. Inclusion in this database does not constitute an endorsement by NCAL, nor do we claim to have compiled a comprehensive list of all adult literacy software available commercially. Our purpose is to make information about adult literacy software more readily available to those working in the field.

Selected Organizational Resources for Workplace Literacy

NATIONAL CENTER ON ADULT LITERACY (NCAL)

The National Center on Adult Literacy (NCAL) provides leadership for research and development in the field of adult literacy.

NCAL's mission is three-fold:
- to enhance the knowledge base about adult literacy
- to improve the quality of research and development in the field, and
- to ensure a strong, two-way relationship between research and practice.

Through applied research and development, NCAL seeks to improve the quality of adult literacy programs and services on a nationwide basis. NCAL's research and development goals revolve around four central themes: (a) to better understand literacy (reading, writing, and math) within a variety of life situations, including family, work and community; (b) to describe for practitioners and policymakers the multiple paths an adult might take to become more literate; (c) to better understand the adult learning process and the most effective instruction in different situations; and (d) to develop more powerful tools for better decision-making.

NCAL has a major R & D project on Workplace Literacy. In addition, several international comparative studies have been done that address workplace issues.

Dissemination of NCAL's research results and their implications occurs through many different avenues. The Center's publications, which include research reports, practitioner guides, policy/practice briefs, and a newsletter, are available in print, on disk, and through the Internet.

NCAL provides information to adult literacy practitioners, literacy resource centers, federal, state, and local policymakers, researchers, educational institutions, libraries, and industry.

Contact Information:
Daniel A. Wagner, Director or
Joyce Harvey-Morgan, Associate Director
National Center on Adult Literacy
University of Pennsylvania
3910 Chestnut Street
Philadelphia, PA 19104-3111
Phone: (215) 898-2100
Fax: (215) 898-9804

NATIONAL INSTITUTE FOR LITERACY (NIFL)

The National Institute for Literacy (NIFL) is an independent agency established by Congress in 1991 to serve as the nation's focal point for enhancing the literacy skills necessary for all Americans to contribute fully to society by achieving their potential in their jobs, families, and communities.

Activities of NIFL include the following: (a) developing and disseminating information about effective literacy methods, including collaborating with state and local education agencies, academic institutions, public and private nonprofit agencies, and community-based organizations; (b) coordinating and supporting research; (c) assisting federal agencies in setting specific policy strategies for meeting national goals related to literacy, including education reform, employment and training, welfare reform, and crime control; (d) providing technical assistance, policy analysis, and program evaluation to literacy providers, including the establishment of a national database; and (e) providing a toll-free national hotline for prospective tutors and students.

NIFL is a unique collaborative effort between three federal agencies. It is administered jointly by the Secretaries of Education, Labor, and Health and Human Services. The nonpartisan Advisory Board, which is appointed by the President and confirmed by the Senate, includes nationally recognized leaders in family literacy and volunteer literacy programs, as well as representatives of academic and non-profit institutions, adult learners, businesses, private foundations, and state and local government.

Contact Information:
Andy Hartman, Director
National Institute for Literacy
800 Connecticut Avenue, NW, Suite 200
Washington, DC 20006
Phone: (202) 632-1500
Fax: (202) 632-1512

NATIONAL WORKPLACE LITERACY PROGRAM (NWLP)

Begun in 1988 and modified by the National Literacy Act of 1991, the program provides grants for projects to improve the productivity of the workforce through improvement of literacy skills needed in the workplace. A required element is partnerships between businesses, industries, labor unions or private industry councils, and educational organizations.

Contact Information:
U.S. Department of Education
National Workplace Literacy Program
Office of Vocational and Adult Education
Division of National Programs
400 Maryland Avenue, SW
Washington, DC 20202-7240
Phone: (202) 205-9872

INSTITUTE FOR THE STUDY OF ADULT LITERACY

The Institute's mission is threefold: (a) Research and development related to all aspects of adult literacy; (b) Professional development of staff and tutors; (c) Leadership at the state and national levels. The Institute is not a service provider but works with service providers of all types in its projects. The Institute's research and development efforts have resulted in computer- and print-based products that are available from the Institute and commercially. Its specialties are workplace/workforce literacy, family literacy, technology, special needs populations and community literacy.

Contact Information:
Eunice Askov, Director
Institute for the Study of Adult Literacy
Pennsylvania State University
204 Calder Way, Suite 209
University Park, PA 16801-4756
Phone: (814) 863-3777
Fax: (814) 863-6108

NATIONAL WORKFORCE ASSISTANCE COLLABORATIVE (NWAC)

The National Workforce Assistance Collaborative builds the capacity of the service providers working with small and mid-sized companies in order to help businesses adopt high-performance work practices, become more competitive, and ultimately advance the well-being of their employees. The Collaborative was created with a $650,000 cooperative agreement grant from the U.S. Department of Labor to the National Alliance of Business. Current partners on the project include the Council for Adult and Experiential Learning, the Institute for the Study of Adult Literacy at Pennsylvania State University, the Maryland Center for Quality and Productivity, and the National Labor-Management Association. The Collaborative provides assistance in four areas: employee training, labor-management relations, work restructuring, and workplace literacy.

The Collaborative has developed a number of products and services for small and mid-sized companies seeking workplace literacy assistance, and for workplace literacy service providers. Listed below are some of those products.

For Small and Mid-Sized Companies:

Tools to help them assess workplace literacy products and service providers:

- *Workplace Literacy Product Checklist* —A checklist companies can use to determine whether particular workplace literacy products follow best practice.
- *Workplace Literacy Interview Guide*—An interview guide companies can use to interview and select appropriate workplace literacy service providers.

For Service Providers:

Information on ways to better meet the needs of small and mid-sized companies:

- *Business Assistance Notes*—A newsletter series for service providers. The first newsletter focuses on the needs of small and mid-sized companies. New ones will be developed periodically.

For Companies and Service Providers:

Products and tools for locating resources and facilitating communication and the sharing of ideas and resources among companies and providers:

- *Resource Guide*—A listing of national membership organizations and state program offices supporting workplace and workforce changes in employee training, labor-management relations, work restructuring, and workplace literacy.
- *Workplace Literacy Bibliography*—An annotated bibliography of workplace literacy resources.

Electronic Networking

- *Electronic Forum*—A "listserv" on the Internet which enables subscribers to discuss issues and share information on meeting the needs of small and mid-sized businesses in the areas of employee training, labor-management relations, work restructuring, and workforce literacy.
- *Data Base*—A "gopher server" on the Internet which disseminates Collaborative products and connects users to other relevant databases. This server enables users to share instructional and staff training materials, research studies, bibliographies, program guides, reports, articles, and other information resources.

Contact Information:

Bernice Jones
National Alliance of Business
1201 New York Avenue, NW
Washington, DC 20005-3917
Phone: (202) 289-2915
Fax: (202) 289-1303
TDD: (202) 289-2977

AMERICAN ASSOCIATION FOR ADULT AND CONTINUING EDUCATION (AAACE) COMMISSION ON BUSINESS, INDUSTRY, AND LABOR

Purpose:

- encourage dialog between business, industry, labor members, and educational and training service providers
- stimulate the professional development of the above groups through conference sessions, newsletter contributions, etc.
- provide leadership in policy development and legislation related to workforce improvement

Activities:

- begin an electronic communication system (LISTSERV) on workforce development issues
- track legislative activities that relate to workforce development
- encourage participation of vendors in the commission activities to enlist their support of workforce development
- consider how workforce literacy and technical training might best be integrated
- study how various services can best be delivered to small and mid-sized businesses.

Contact Information:

Commission on Business, Industry, and Labor
AAACE
1200 19th Street, NW, Suite 300
Washington, DC 20036
Phone: (202) 429-5131
Fax: (202) 223-4579

AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT (ASTD)

Conducts research, has program resources available on workplace literacy.

Contact Information:
ASTD
Institute for Workplace Literacy
1640 King Street, Box 1443
Alexandria, VA 22313-2043
Phone: (703) 683-8158

AFL-CIO HUMAN RESOURCES DEVELOPMENT INSTITUTE

Provides materials, training, and technical assistance for labor education programs.

Contact Information:
AFL-CIO Human Resources Development Institute
815 16th Street, NW
Washington, DC 20006
Phone: (202) 638-3912

ERIC CLEARINGHOUSE ON ADULT, CAREER, AND VOCATIONAL EDUCATION

Publications on the topic of workplace literacy include *Digests*, *Trends and Issues Alerts*, and semiannual news bulletin, *ERICfile*. Provides information services including searches of the ERIC database.

Contact Information:
ERIC Clearinghouse on Adult, Career, and Vocational Education
Center on Education and Training for Employment
Ohio State University
1900 Kenny Road
Columbus, OH 43210-1090
Phones: (614) 292-4353
(800) 848-4815

Part C:

Electronic On-Line Resources

Electronic Resources for Workplace Literacy

In order to facilitate continued dialogue among videoconference participants and to assist practitioners in the discovery of adult literacy resources on the Internet, we are encouraging you to participate in follow-up electronic on-line activities. Information follows on the resources available electronically that are relevant to adult literacy and on how to gain access to electronic networks and the Internet.

Below are listed several LISTSERVs and Internet Gopher servers that are relevant to literacy training in the workplace. For more information about getting connected to or using the Internet, please see the participant packet for the videoconference *Technology: New Tools for Adult Literacy* (participant packet only: $8, participant packet plus two-hour video of the videoconference: $35. To receive an order form, contact Ms. Paté Mahoney at NCAL at (215) 898-2100).

What Are E-mail LISTSERVs and How Do I Use Them?

LISTSERVs are e-mail-based systems that allow interactive communication. Unlike regular e-mail communication, which allows one-to-one communication, LISTSERVs allow one-to-many communication. To participate in a LISTSERV, one must first subscribe by sending an e-mail message to a special address with a "subscribe" statement in the body of the message.

Please note: Anyone with an Internet e-mail account can participate in a LISTSERV, including users of America Online, Delphi Internet Services, CompuServe, GEnie, OTAN, and any Freenet.

Once subscribed, users hold interactive discussions on issues by sending e-mail messages to a designated e-mail address.

When the computer receives the message, it immediately "reflects" it back to all the LISTSERV subscribers. In a few minutes, the message will appear in all the subscribers' e-mail boxes. Subscribers can then forward their responses to everyone on the LISTSERV by composing a new message and sending it to the same e-mail address. It is customary for correspondents, when referring to previous messages, to copy part of the original message in their reply so that all subscribers have a sense of the context in which the reply was generated.

If you want to stop receiving messages from a particular LISTSERV, you simply unsubscribe by following another specific set of directions (which will be included in your introductory post from the LISTSERV).

E-Mail LISTSERVs Relevant to Workplace Literacy

NWAC-L (National Workforce Assistance Collaborative Listserv)

To join the list and receive the mailings from NWAC-L:

Send a message to: LISTSERV@psuvm.psu.edu (make the subject "None")
saying: subscribe NWAC-L YourFirstName YourLastName

For example:
To: LISTSERV@psuvm.psu.edu
Subject: None
Message: subscribe NWAC-L John Doe

To submit a message to NWAC-L:
Send the mail message to: NWAC-L@psuvm.psu.edu

NWAC-L is an electronic forum designed to address issues related to the changing nature of work and the workforce, specifically issues affecting small and mid-sized businesses in the areas of workplace literacy, employee training, work restructuring, and labor relations. This LISTSERV is an electronic forum for discussing issues, sharing information (i.e., instructional strategies and materials, research and its applications, staff training approaches, evaluation methods), and reviewing/critiquing materials produced by the National Workforce Assistance Collaborative (NWAC). This LISTSERV is also a forum for discussing the business of the AAACE Commission on Business, Industry, and Labor.

NWAC is a U.S. Department of Labor initiative established in 1993 through a cooperative agreement with the National Alliance of Business and its partners. The Collaborative is helping small and mid-sized businesses adopt high-performance work practices, become more competitive, and create and retain high skill, high wage jobs for American workers. For further information, contact Brett Bixler (BXB11@PSU.EDU) or Barbara Van Horn (BLV1@PSU.EDU). Both may be reached by phone at the Institute for the Study of Adult Literacy (814) 863-3777.

WEC-L: The Workplace Education Collaborative

To join the list and receive the mailings from WEC-L:

Send a message to: LISTSERV@netcom.com (make the subject "None")
saying: subscribe WEC-L YourEmailAddress

For example:
To: LISTSERV@netcom.com
Subject: None
Message: subscribe WEC-L janedoe@address.wpl

To submit a message to WEC-L:
Send the mail message to: WEC-L@netcom.com

"WEC-L" is an experiment in using telecommunications to link those interested in developing new forms of workplace literacy education. "WEC-L" is an electronic list managed by members of the Workplace Education Collaborative. WEC is a network of workplace educators in North America who have in recent years created models which stress active participation by all stakeholder groups in the design, implementation, and continuous improvement of workplace education programs.

These collaborative programs are designed to serve a number of interests: participants' personal growth and the quality of work life and productivity of the host organization. It is hoped that such education will also contribute to the creation of a more equitable and democratic society and economy.

This list is for members of WEC—and for others with a similar perspective on workplace education—to share ideas and information. Subscribers can use this list to strengthen their practice and to help shape policy.

Other LISTSERVs Relevant to Adult Literacy

NLA: National Literacy Alliance

To join the list and receive the mailings from NLA:

Send a message to: Majordomo@world.std.com (make the subject "None")
saying: subscribe nla

For example:
To: Majordomo@world.std.com
Subject: None
Message: subscribe nla

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To submit a message to NLA:

Send the mail message to: nla@world.std.com

The National Literacy Alliance sponsors an electronic list to help advocates keep informed about national public policy issues which affect adult literacy education and adult learners. The goal of this list is to keep advocates informed about critical legislative and public policy issues so that timely, coordinated policy actions are possible. It also serves as a forum for discussion of these issues. Users are encouraged to post ideas, questions, and information once they are subscribed.

AEDNET: Nova University

To join the list and receive the mailings from AEDNET, send a message to: LISTSERV@alpha.acast.nova.edu (make the subject None), saying: subscribe AEDNET YourFirstName YourLastName

For example:

To: LISTSERV@alpha.acast.nova.edu
Subject: None
Message: subscribe AEDNET John Doe

(Note: Please put your name in place of "John Doe")

To submit a message to AEDNET, send the e-mail message to: AEDNET@alpha.acast.nova.edu

The Adult Education Network (AEDNET) is an international network of individuals interested in adult education. The network is operated through a LISTSERV that enables subscribers to share information. Researchers, practitioners, and graduate students in adult and continuing education are provided with opportunities to discuss important topics and concerns in an on-line environment.

AEDNET is operated by the Adult Education Program of the Programs for Higher Education of the Abraham S. Fischler Center for the Advancement of Education at Nova Southeastern University located in Fort Lauderdale, Florida. AEDNET activities include network-wide discussions and information exchanges on topics and queries, conferences, and special events of interest to adult and continuing educators. Also, a refereed electronic journal, *New Horizons in Adult Education*, is distributed through AEDNET.

LITERACY: NYSERNET

To join the list and receive the mailings from LITERACY, send a message to: LISTSERV@nysernet.org (make the subject None), saying: subscribe LITERACY YourFirstName YourLastName

For example:

To: LISTSERV@nysernet.org
Subject: None
Message: subscribe LITERACY John Doe

(Note: Please put your name in place of "John Doe")

To submit a message to LITERACY, send the e-mail message to: LITERACY@nysernet.org

LITERACY is a moderated general discussion group for those individuals concerned with the issues of literacy. It is hoped that the group will foster discussion by those involved in teaching adults to read and write. It is also open to anyone who is interested in the topic of literacy in general. Discussion of such topics as family literacy are welcome. The sharing of ideas, tips, helpful resources, teaching tools, and personal experiences are all to be encouraged.

The primary goal of the list is the fostering of literacy in those adults for whom English is the native language, but who, for any number of reasons, never learned to read or write. It is acknowledged that the learning of English as a second language is also considered a literacy issue, but the specific concerns of this issue are beyond the scope of this list. Of course, any general literacy discussion issues that happen to arise from the teaching of English as a second language are welcome.

What is a Gopher Server?

The Internet Gopher is software that allows the user to recover information stored on computers that are connected to the Internet. Gopher uses a series of menus to help users find information resources and then transfer those resources, whether they are software or electronic documents, to their computers. Using Gopher you can retrieve research reports, find the latest free or low-cost software, or search databases on everything from educational research publications to grant funding opportunities. Gopher may be accessed through a number of different on-line services, such as America Online and Prodigy, through community-based Internet access points called Freenets, now available in more than a dozen communities around the U.S., or through electronic networks found in some corporations, community colleges or universities.

Gopher Servers Relevant to Workplace Literacy

National Center on Adult Literacy **Address:** litserver.literacy.upenn.edu

Distributes research reports, newsletters, and other information resources prepared by the National Center on Adult Literacy.

- Research reports on workplace literacy
- Research reports on other topics in adult literacy
- Archive of shareware/freeware
- Database of commercial adult literacy software
- Conference announcements
- Links to other adult literacy-oriented Gopher servers

National Workforce Assistance Collaborative (NWAC) **Address:** info.psu.edu

*Note: After you reach the Gopher Server, open "Information Servers at Penn State" to find the National Workforce Assistance Collaborative or NWAC Gopher Site.

Offers on-line access to:

- materials and products produced by NWAC
- instructional and staff training materials
- bibliographies
- articles concerning small and mid-sized businesses and the challenges they face
- research studies
- databases
- program guides
- reports

See LISTSERV section on NWAC-L for further information about NWAC.

AskERIC: Educational Resource Information Center **Address:** ericir.syr.edu

General educational information center that can be searched for adult literacy-related information. ERIC is continually being updated and revised.

- Lesson plans
- Bibliographies
- News and announcements
- ERIC digests and full length articles
- Electronic books, journals, and reference tools
- Links to other education resources and gophers

Electronic Workplace Literacy Resources: Getting Connected

Despite the growing popularity of the Internet as a telecommunications tool, finding a service provider that offers individuals or organizations access to the Internet is still not easy. There are three ways to gain access to the Internet: via a high-speed institutional (i.e., university, government, library, etc.) connection, through community-based dial-up systems generically called Freenets, or through a commercial dial-up access provider. There are literally hundreds of Freenets and commercial access providers. If you would like a full list, please order the participant packet for the first videoconference, *Technology: New Tools for Adult Literacy,* from NCAL (see page 24 for ordering information). Of the commercial services that offer individuals and organizations low-cost, modem-based access to the Internet, America Online and Delphi Internet Services are the largest. Below you will find basic information about subscribing to these services. America Online (AOL) is the recommended access provider because it offers 10 free hours of service to new users, has an easy-to-install and easy-to-use interface, and has several proprietary information resources and communications groups devoted to adult literacy.

Note: The sponsors of this videoconference neither support nor endorse the use of any of the on-line services mentioned in this document; any recommendations are for informational purposes only.

To connect to either America Online or Delphi Internet Services, you will need to have, at minimum, a personal computer and a modem (a device that allows computers to exchange data with one another via plain phone lines). If you need more information about setting up your computer to access the Internet or if any of the terms used below are unfamiliar, please order the participant packet that accompanied *Technology: New Tools for Adult Literacy* or contact the access provider that you are planning to use.

America Online
Phone: 1-800-827-6364

Subscribing

If you are not already a member of America Online (AOL), do the following:

1. If you or your program has more than one computer, decide which computer will be used to dial into America Online.
2. If you do not have them, order a modem and cable. Preferably, the modem should operate at 9,600 or 14,400 bps. However, the modem MUST be compatible with the Hayes AT command set (the modem package should say something to the effect of "Hayes Compatible" or "100% Hayes Compatible"; if you have questions, consult with the store where you plan to buy the modem).
3. If you have an IBM, find out how much random access memory (RAM) your computer has, how large the hard drive is, what type of video adapter it uses, the version of DOS you use, and (if applicable) the version of Windows used. If you have a Macintosh, determine how much RAM memory you have, how large your hard drive is, and the version of the system software you use.
4. Call America Online at 1-800-827-6364. Provide the sales representatives with the information about your computer that you collected earlier and ask them whether America Online's software will work with your system. If not, ask them what you would have to add to your computer in order to make it work properly with America Online. America Online will ship you the software necessary to subscribe to America Online in 10-14 days. If you need help with any aspect of using AOL, call the number listed above.

IMPORTANT: When you subscribe to America Online, the system will request your credit card number. America Online provides you with 10 hours of free service during the first 30 days you are subscribed to the system. When the initial 10 hours are used or after 30 days, <u>subsequent connections to America Online will be charged to your credit card</u>. We encourage you to monitor your on-line time carefully if you intend only to take advantage of the free time and do not intend to continue your subscription. The sponsors of this videoconference have not purchased connection time from America Online and are not responsible for usage charges arising from participation in any of the on-line follow-up activities.

Using America Online's Internet Features

AOL's Internet features, including e-mail, the USENET bulletin board (AOL calls USENET "Newsgroups"), Gopher/WAIS databases, and FTP are located in AOL's Internet Center. You can find the Internet Center by using the "Keyword" option in the "Go To" menu. For more information on using AOL generally and AOL's Internet tools specifically, we recommend purchasing the *America Online Tour Guide* from AOL and Ventana Press.

Delphi Internet Services, Inc.
Phone: 1-800-695-4005

Subscribing

If you are not already a member of Delphi Internet Services, do the following:

1. If you or your program has more than one computer, decide which computer will be used to dial into Delphi.
2. If you do not have them, order a modem and cable. Preferably, the modem should operate at 9,600 or 14,400 bps. However, the modem MUST be compatible with the Hayes AT command set (the modem package should say something to the effect of "Hayes Compatible" or "100% Hayes Compatible"; if you have questions, consult with the store where you plan to buy the modem).
3. If your modem did not come with terminal emulation software (software that controls the modem and allows you to communicate with Delphi), you will need to purchase it from a software vendor. The most popular packages for IBM compatibles is ProComm 2.4 from DataStorm and SmartCom from Hayes Microsystems. On the Macintosh, the most popular packages are MicroPhone Pro from Software Ventures and SmartCom II from Hayes Microsystems. You will need to become familiar with the software before attempting to connect with Delphi. Specifically, become familiar with the stop bit, data bits, and parity settings in the software. The software's manual should help you sort out these settings.
4. Call Delphi at 1-800-695-4005. The sales representative will give you a user name and password, which will allow you to log into the system. Also ask the sales representative to give you the parity, data bits, and stop bit settings for your modem software.

IMPORTANT: When you subscribe to Delphi Internet Services, the system will request your credit card number. Delphi provides 5 hours of free service during the month in which you subscribe. When the initial 5 hours are used or at the end of the month in which you initiated your subscription, <u>subsequent connections to Delphi will be charged to your credit card</u>. We encourage you to monitor your on-line time carefully if you intend only to take advantage of the free time and do not intend to continue your subscription. The sponsors of this videoconference have not purchased connection time from Delphi Internet Services and are not responsible for usage charges arising from participation in any of the on-line follow-up activities.

Using Delphi's Internet Features

To use any Internet services, you must first register as an Internet user. Delphi charges an additional $3 per month for access to Internet tools. To register as an Internet user:

1. Log in.
2. Enter "Terms" and hit return. This will take you through the terms of use for Delphi's Internet service. Be sure to read this document before continuing.
3. Enter "Register" and hit return.
4. Enter "Exit" and hit return. This will leave you in Delphi's Internet special interest group (SIG). Entering "Exit" and hitting return a second time will return you to the main menu.

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