DOCUMENT RESUME

ED 334 431 CE 058 491

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TITLE Evaluating National Workplace Literacy Programs.
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SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 20 Apr 91
NOTE 13p.
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Basic Education; *Adult Literacy; Adult Programs; Employment Practices; *Evaluation Criteria; *Evaluation Methods; Federal Programs; *Literacy Education; *Program Evaluation; Quality of Working Life; Research Methodology
IDENTIFIERS *National Workplace Literacy Program; *Workplace Literacy

ABSTRACT

This report discusses evaluation as required under the Department of Education rules and regulations for the National Workplace Literacy Program (NWLP). It is intended to help workplace literacy programs meet the requirements of the rules and regulations governing the NWLP so that the Department of Education can determine the value of programs. The discussion of evaluation focuses upon the relationship of the evaluation of workplace programs to the original criteria that the Secretary of Education used to evaluate applications for establishing programs in the first place. A table presents the criteria used to evaluate proposals, reworded and rearranged to emphasize their use in preparing an evaluation report of a program once it has been funded and implemented. These criteria specify, in outline, what a well-designed and operated workplace literacy program would look like. The paper discusses the following topics: purpose of the NWLP, the relationship of literacy ability to productivity, the relationship of program design and development to evaluation, using the criteria in program evaluation, the need for data on program effectiveness, measuring the outcomes of learning, measuring improvements in productivity, and developing an attitude for inquiry. The paper lists 4 references and 10 resources. (KC)

# *EVALUATING NATIONAL WORKPLACE LITERACY PROGRAMS*

by

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**April 20, 1991**





**Preparation of this report was supported by a purchase order from the U.S. Department of Education/OVAE to Thomas G. Sticht. The findings and opinions are those of the author and do not represent the policies or positions of the U. S. Department of Education/OVAE.**

# Evaluating

# National Workplace Literacy

# Programs

Typically, whenever the federal government becomes involved in funding educational programs, there is a need for the government officials to review programs to determine whether the programs they have funded are, in fact, providing useful educational experiences that meet the intent of the Congress, as representatives of the public at large. In this case then, it is advantageous to go beyond the self-reports of those involved that they are receiving beneficial educational services. There is a need for additional evidence of the effectiveness of the program that is less subjective. For instance, if a program aims to improve the ability of employees to read their job-related materials, then it is not sufficent for evaluation to report that instructors and employees *say* they can read their job-related materials better after they have been in the program for a while. Rather, some confirming evidence, such as demonstrated improvements in performing job-related reading tasks, would be useful.

## Purpose of the Present Report

For those who request and receive funding for programs under the federal National Workplace Literacy Program, the U. S. Department of Education has published rules and regulations regarding the evaluation of such programs (The Federal Register, Friday, August 18, 1989, pp. 34418-34422). Among other things, the regulations require that each application for funds under the program include an evaluation plan (see Table 1, column 6). In this case then, program operators must satisfy not only themselves and the other participants active in the program as to the value of the program, they must also satisfy the Department of Education which must report on the value of the programs to Congress.

This report expands upon the discussion of evaluation given in the Department of Education rules and regulations for the National Workplace Literacy Program (NWLP). It is not a "how to do it" guide for evaluation. Rather, it is a discussion of evaluation aimed at helping workplace literacy programs meet the requirements of the rules and regulations governing the NWLP so that the Department of Education can determine the value of programs. Properly carried out, the process of evaluation as outlined by the federal regulations should also help program operators more effectively design, develop, implement, operate and improve their workplace literacy programs.

Because good evaluation starts at the beginning, not the end of a program, in this report, the discussion of evaluation focuses upon the relationship of the evaluation of workplace programs to the original criteria that the Secretary of Education uses to evaluate applications for establishing programs in the first place. Table 1 presents the criteria used to evaluate proposals reworded and rearranged here to emphasize their use in preparing an evaluation report of a program once it has been funded and implemented.These criteria specify, in broad outline, what a well-designed and

**Table 1. Ilustration of How Criteria for Evaluating Proposals for National Workplace Literacy Can be Used to Report Evaluations of Programs.**

| Need for the Project<br>1 | Program Factors<br>2 | Quality of Training<br>3 |
|---|---|---|
| Documents the needs to be addressed by the project. | Demonstrates the active commitment of all partners to accomplishing project goals. | Provides training through an eductional agency rather than a business, unless transferring training to a business is necessary and reasonable within the frame-work of the project. |
| Focuses on demonstrated needs of adults for workplace literacy training | Targets adults with inadequate skills aimed at new employment, career advance ment, or increased productivity. | Delivers instruction in a readily accessible environment conducive to adult learning. |
| Documents how needs will be met. | Includes support services based on cooperative partnerships to overcome barriers to participa-tion by adult workers. | Uses individualized educational plans developed jointly by instructors and adult learners. |
| Documents benefits to adult workers and their industries that will result from meeting those needs. | Demonstrates a strong relationship between the skills taught and the literacy requirements of actual jobs. | Uses curriculum materials designed for adults that reflect the needs of the workplace. |

| Plan of Operation<br>4 | Experience & Quality of Personnel<br>5 | Evaluation Plan & Cost-Effectiveness<br>6 |
|---|---|---|
| Describes roles of each member and each site of the partnership. | Provides evidence of the applicant's experience in providing literacy services to working adults. | Provides clear, appropriate methods of evaluation that are objective and produces data that are quantifiable. |
| Describes activities to be carried out by any contractors. | Provides evidence of the experience and training of the project director in project management. | Identifies expected outcomes of the participants and how those outcomes will be measured. |
| Describes roles of other organizations in providing cash, in-kind assistance, or other contributions to the project. | Provides evidence of the experience and training of key personnel in relation to the project requirements. | Determines effects of program on job retention, performance, and advance-ment. |
| Describes the objectives of the project and plan to use project resources to achieve each objective. | Indicates amount of time each key person will devote to project. | Obtains data that can be used for program improvement. |
| Establishes measurable objectives for the project that are based on the project's overall goals. | Indicates how nondiscriminatory employment practices will be implemented. | Provides data indicating costs of the program in relation to its benefits. |

Source: Federal Register, Vol. 54, No. 159, Friday, August 18, 1989, pp. 34419-34420. Note that the wording and ordering here is not the same as in the federal regulations. The latter should be used for preparing proposals. The present ordering is for illustrating how the critieria may be used for the evaluation of programs not proposals.

operated workplace literacy program would look like. The evaluation, then, indicates how well the program operators implemented the design and operational plans that they submitted for funding, what outcomes are being achieved and how the program can be modified to make it more effective.

In general, the purpose of evaluation for the Department of Education is to permit the Department to place a value on the program in providing services and in demonstrating innovative and effective practices. That is, it must first decide whether a proposal for a program is likely to result in a needed and effective program, and then it must decide whether the program finally developed and implemented is providing an educational experience that meets the stated criteria outlined in the original proposal and the intent of the Congress when it passed the bill creating the NWLP.

Evaluation in the NWLP is not something that is accomplished at the end of a program development and implementation effort to "see if it worked." Rather, evaluation is an integral part of the original design of the program and an ongoing process that can permit decisions about how well the program is achieving one or more of the purposes of the NWLP and, where desirable, to improve the program and its value to adult learners, other partners in the project, and the society at large.

## Purpose of the National Workplace Literacy Program

Both literacy providers and the Department of Education must evaluate their programs with regard to how well they are achieving the purpose of the National Workplace Literacy Program (NWLP). Figure 1 outlines the general purpose of the NWLP and illustrates the types of literacy and productivity indicators that might be included in a workplace literacy program.

The general purpose of the NWLP is to provide grants or cooperative agreements involving exemplary partnerships of business, industry, or labor organizations and educational organizations for projects designed to *improve the productivity of the workforce* through the *improvement of literacy skills in the workplace* by -

(a) Providing adult literacy and other basic skills services and activities;

(b) Providing adult secondary education services and activities that may lead to the completion of a high school diploma or its equivalent;

(c) Meeting the literacy needs of adults with limited English proficiency;

(d) Upgrading or updating basic skills of adult workers in accordance with changes in workplace requirements, technology, products, or processes;

(e) Improving the competency of adult workers in speaking, listening, reasoning, and problem solving; or

(f) Providing educational counseling, transportation, and child care services for adult workers during nonworking hours while the workers participate in the project (Federal Register, August 18, 1989, vol. 54, no. 159, p. 34418).

As illustrated in Figure 1, the NWLP aims to improve the productivity of the workforce by improving the literacy of the workforce. This leads to the two primary questions for evaluation: (1) does the program improve workforce literacy abilities, and (2) do the improved literacy abilities lead to improved productivity?

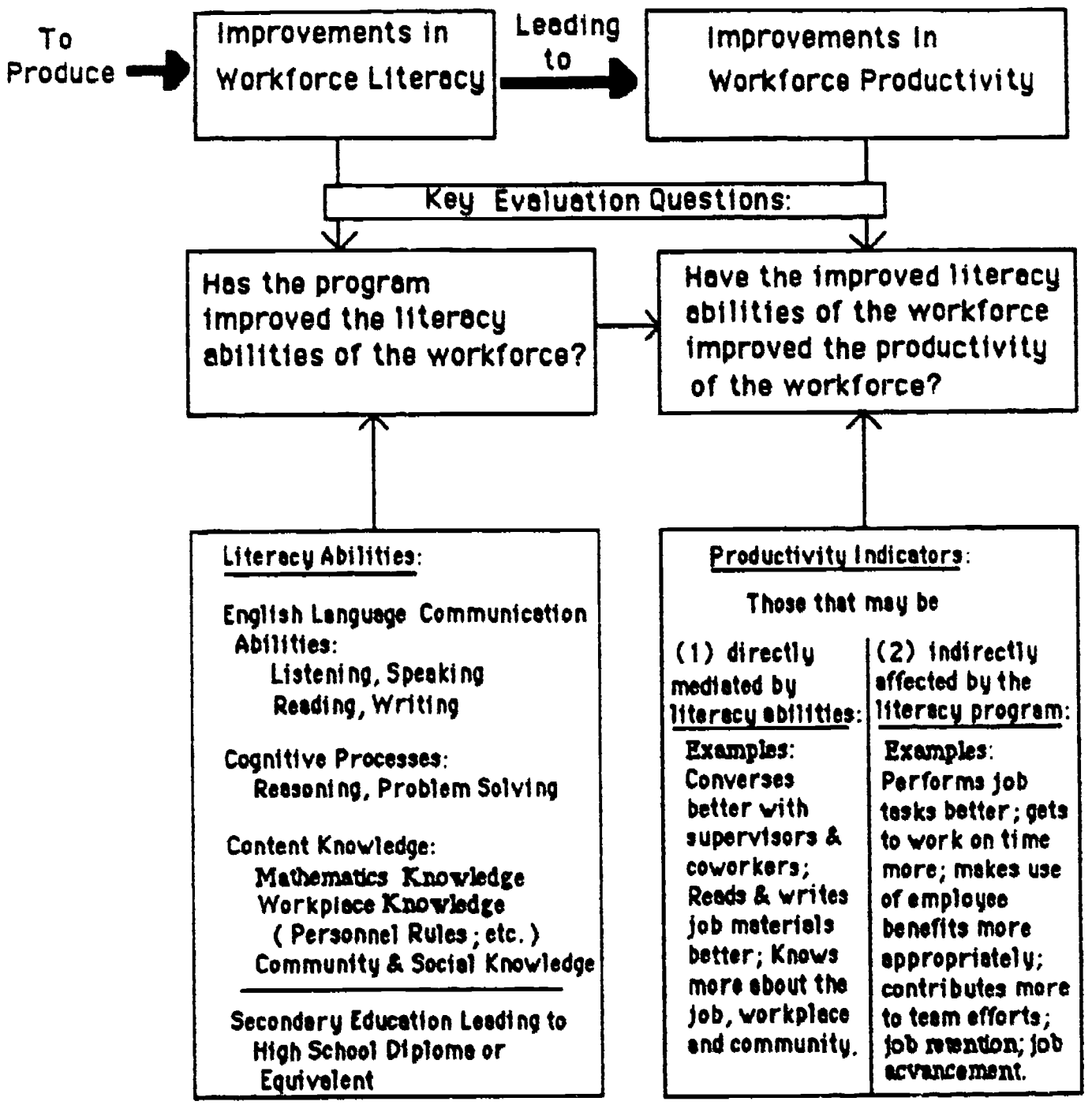


Figure 1. The purpose of the National Workplace Literacy Program is to improve the productivity of the workforce through the improvement of literacy skills in the workplace. Key evaluation questions are (1) have workforce literacy skills been improved and (2) has that led to improvements in productivity? Several examples of "literacy abilities" and "productivity indicators" are given.

**The Relationship of Literacy Ability to Productivity.** The basic assumption of the NWLP is that there is a relationship between various literacy abilities, as illustrated in Figure 1, and job productivity, as indicated by various measures, examples of which are given in Figure 1.

Though this may seem straightforward, it is not true that all aspects of productivity are directly mediated by literacy ability. For instance, many job tasks do not require the direct application of reading or writing abilities. Nor will they necessarily require specialized knowledge that requires reading and writing abilities. Many job tasks can be learned by watching others and imitating them.

Therefore, in determining the need for a workplace literacy program that emphasizes increasing the reading, writing, or other literacy abilities of the workforce, it is important that program developers understand the role of literacy ability in relation to various indicators of productivity. Otherwise, if there is simply a blanket assumption that increasing literacy ability will increase productivity in some unspecified manner, it may not be possible to demonstate that the program has, indeed, increased productivity.

Figure 1 indicates that some productivity indicators may be directly mediated by literacy abilities while others may be only indirectly mediated by literacy ability. For example, being able to comprehend oral directions that supervisors provide is directly mediated by the ability to comprehend the English language, if that is the language used by the supervisor. If the directions are not understood, then the worker may not know what to do or how to do it. In this case, the job tasks may not get done, or they may not be correctly performed, even though the tasks, themselves, do not require language comprehension.

In such circumstances, improving English language comprehension skills may lead to improved job task performance not because the tasks require language comprehension, but because understanding the directions about what to do and how to do it requires language comprehension.

On the other hand, because the job tasks do not directly involve the comprehension of English language, it is possible that workers may learn what to do and how to do it by watching others. In this case, then, increasing English language skills may not lead to improved task performance. Therefore, some other indicator of the increase in productivity due to increased language ability should be sought.

Generally speaking, *unless a direct relationship to some indicator of productivity can be demonstrated in the design of the program, the program developer should not promise to improve that aspect of job productivity*. However, as a part of the program evaluation, information about aspects of productivity that are not known to be directly mediated by literacy ability should be obtained because of the possiblity of the indirect influence of increased literacy ability, or simply participation in the literacy program, may have on various indicators of productivity. For instance, if having access to education programs boosts employee morale, indicators of productivity such as attendance, less tardiness, increased cooperativeness (team work) and so forth may improve.

**Relationship of Program Design and Development to Evaluation**

Because the purpose of the NWLP is to increase workforce productivity through the improvement of literacy ability, the design of a workplace literacy program should indicate the relationship between literacy ability and productivity, and how the program intends to increase productivity through the improvement of some aspect of literacy ability.

This relationship of program design and development to evaluation is illustrated in Table 1 in columns 1, 2, and 3. Column 1 calls for a *needs assessment* that focusses on documenting the needs of adults for workplace literacy training, how the needs will be met and how meeting those needs will benefit the workers and their industries. Column 2 calls for program factors that demonstrate a strong relationship between the skills taught and the literacy requirements of actual jobs. Then Column 3 makes clear the need to directly address the program to workplace literacy requirements by calling for the use of curriculum materials that reflect the needs of the workplace.

If the design of the program accomplishes the activities of columns 1,2, and 3, then the program will have gone a long way toward meeting the requirements of Column 6 for the identification of expected outcomes, how those outcomes will be measured, and how those outcomes are related to job retention, performance and advancement.

## Using Table 1 in Program Evaluation

As illustrated in the preceeding section, Table 1 outlines criteria for a well-designed workplace literacy program. Presumably, since these are criteria used to select projects for funding, any projects that receive funding have successfully met these criteria, at least to some minimally acceptable extent.

The process of evaluation is the process of turning the various declarative statements, such as "Focuses on demonstrated needs of adults for workplace literacy training"(column 1) into questions, such as "Does the program focus on the needs of adults for workplace literacy training, and how is this demonstrated?"

By following this procedure of transforming declarative into interrogative statements, Table 1 can be transformed from a list of criteria for evaluating *proposals* for programs into criteria for evaluating *programs* of workplace literacy.

Table 2 illustrates how the categories of Table 1 can be used to summarize the results of evaluation studies. In Table 2, findings are summarized from a study of the National Workplace Literacy Program by Kutner, Sherman, & Webb (1990; source number 1). Additionally, results are summarized from a survey of workplace literacy program evaluations by Mikulecky & D'Adamo-Weinstein (1990; source number 2). While the placement of the particular findings in the Table 1 categories may be arguable in some cases, the point is that Table 2 illustrates that the categories of Table 1 may be used to conduct and report evaluations of NWLP projects.

For instance, note that in Table 1, category 2-Program Factors, calls for the proposal to "Demonstrate a strong relationship between the skills taught and the literacy requirements of actual jobs." Then, in Table 2, category 2, it is noted that "Study sites typically assess participant literacy levels through standardized tests that are typically used for ABE and are not geared for workplace literacy." Because standardized tests do not strongly represent "the literacy requirements of actual jobs" they were not considered appropriate for assessing participant literacy levels. This observation was included in category 2, rather than in category 6-evaluation- because it illustrates the difficulty of matching skills taught (and assessed) to the literacy requirements of actual jobs.

Additional entries in Table 2 suggest the types of findings that professional evaluators have reported from their studies of workplace literacy progams. They illustrate, therefore, the kinds of activities and problems that others might consider in evaluating workplace literacy programs.

**Table 2. Comments from Evaluations of Workplace Literacy Programs.**

| Need for the Project<br>1 | Program Factors<br>2 | Quality of Training<br>3 |
|---|---|---|
| Supervisors are involved with the workplace literacy projects at many of the business sites. Initial reluctance of supervisors at many of these sites to have workers attend clasess on company time has been eliminated as benefits from the project have become apparent. (1) | Although business sites are supportive of the respective workplace literacy projects, few indicated a commitment to continue the project without either federal or other outside funding. (1)<br><br>Study sites typically assess participant literacy levels through standardized tests that are typically used for ABE and are not geared for workplace literacy. (1) | A number of project components may contribute to the absence of retention problems: locating instructional services at the work site, providing participants with monetary incentives, offering a supportive learning environment, and offering support services including child care, reimbursement for transportation, and counseling. (1) |
| Formal literacy task analyses is the exception rather than the rule.(1)<br><br>Businesses at the study sites are actively involved with recruiting participants by identifying potential participants. (1) | Educational providers at the study sites are directly responsible for all instruction-related activities, including conducting literacy task analyses, assessing the literacy skills of participants, developing instructional materials, and hiring and managing instructors. (1) | There is substantial variation from site to site in the total number of hours available per training cycle.(1)<br><br>When instructors do not share program goals and resources are inadequate instructional quality is likely to be inadequate. (2) |

| Plan of Operation<br>4 | Experience & Quality of Personnel<br>5 | Evaluation Plan & Cost-Effectiveness<br>6 |
|---|---|---|
| Business partners at the study sites are not heavily involved with the day-to-day activities of the workplace literacy projects. (1) | With only one exception, educational providers at the study sites do not have prior experience with workplace literacy. (1) | Study sites do not generally conduct formal evaluations of their projects. (1)<br><br>Learners were often evaluated by supervisors in informal reports. (2) |
| Increased demands for classes are reported as indicators of program success. (2) | Almost all of the educational providers at the study sites have hired instructors who possess experience with ABE or ESL programs. (1) | Program evaluations tend to be informal with little or no empirical data. (2) |
| Anecdotal experiences are reported as indicators of program success. (2)<br><br>Evaluations generally rely on ancedotal evidence, including the perceptions of instructors, business supervisors, and more senior staff. (1) | Most educational providers at the study sites do not provide training for instructors before instructional services began. Most, however, do offer in-service training for instructors and volunteers. (1) | When programs are evaluated, they are often assessed mainly through the completion of questionaires and/or surveys by program participants. (2)<br><br>Some programs do test participants both before and after completing the program. These results are often reported only in general terms as indicators of progam effectiveness. (2) |

Sources: (1) Kutner, Sherman & Webb, 1990; (2) Mikulecky & D'Adamo-Weinstein, 1990.

## The Need for Data On Program Effectiveness

Perhaps the most vexing problem in program evaluation is the determination of whether the outcomes that are achieved are useful and justify the expenditures of public funds for this activity to meet learner needs rather than for something else. One of the reasons this is such a problem is that, while this type of decision making is necessary at the federal level, it is not the major concern of local workplace literacy programs. In these programs, program administrators and teachers are concerned with meeting the needs of their adult learners and partners. They are less concerned, if at all, with meeting the needs of federal funding agencies for information for decision making.

While obtaining convincing outcome data is difficult because it is not the highest priority for workplace literacy teachers and adult learners, the problem is compounded by the fact that hundreds of millions of dollars are spent each year on standardized tests and other assessment instruments, throughout the education system in the U.S., and yet no one is satisfied that they are actually obtaining valid information about "true" achievements. This is indicated by the fact that today there are several national activities underway to develop new national examinations to obtain a more valid indicator of how well the nation is doing in education.

In the face of such difficulties in satisfying ourselves that we are doing good, bad, or so-so with regard to educational achievement across the spectrum of educational services in the nation, it is understandable why workplace literacy operators, teachers and adult learners may be reluctant to submit to examinations that they feel are intrusive and nonrepresentative of what they are teaching and learning.

Nonetheless, the fact remains that there is a need, at the federal level, for information regarding the effectiveness of the learning activities and outcomes that are taking place under the categorical funding of the National Workplace Literacy Program. That is why the criteria for proposals includes column 6 of Table 1-Evaluation Plan & Cost-Effectiveness- which includes the requirements for methods of evaluation that are "objective" and which indicate how "outcomes will be measured."

These requirements for "objectivity" and "measurability" of outcomes in evaluation are not baseless requirements of the funding agency. As Table 2 indicates, outside evaluators who have examined workplace literacy programs have independently observed that "progam evaluations tend to be informal (unstandardized) with little or no empirical (objective) data (quantifiable measures)".

In fact, the repeated findings by outside evaluators that programs lack "formal" evaluations, that they use "informal" reports, depend primarily upon self-report questionaires with no substantiating evidence in more "objective" terms of what is reported, and provide "little or no empirical data" are among the most salient outcomes of external evaluations of workplace literacy programs (and all other programs in adult literacy or ABE for that matter).

In short, what these evaluators say is needed is *convincing evidence* that useful learning outcomes are being achieved in programs funded by the NWLP and that this new learning results in *improved productivity* in finding, retaining, performing, or advancing in a job in the workplace. While various types of ratings (e.g., supervisor ratings of increased productivity; teacher ratings of improvement; adult learner ratings of pre-and post-program increases in learning or productivity) provide useful indicators of the program's effects on learning and productivity, such ratings are not totally convincing. They are not free of the potential for self-deception that may bias ratings.

It is the desire to overcome these kinds of subjective judgments that may lead to inaccurate or invalid estimates of the outcomes of programs that lead the federal criteria and evaluation experts to call for "objective","empirical", "measurable" outcomes of literacy learning and productivity.

**Measuring the Outcomes of Learning.** The goal of the NWLP is to increase workforce literacy and thereby improve workplace productivity (see Figure 1). Therefore, the primary outcome of a workplace literacy program that needs to be measured is the extent to which literacy abilities (defined broadly as the set in Figure 1) have been improved. If there are no improvements in literacy abilities then there is no need to look for this non-improvement to increase productivity.[1]

The measurement of literacy abilities ought to reflect the content of what is being taught. The latter, in turn, will have the best chance of being transferred to the job if it consists of the materials and content knowledge needed for getting and performing a job. For instance, if workers in a plant need to learn to write reports from production team meetings, it would be better to teach writing using the writing of team production reports as the vehicle for teaching proper usage of punctuation, planning, presenting, and revising a composition, and other aspects of English language, than to use the writing of fiction or personal accounts of one's life events.

The only way to know if growth has taken place in literacy abilities is to measure the abilities at the outset of the program, and then again later on. Typically, it will be possible to measure both the content knowledge that worker's have relevant to some new domain of learning that they wish to command, and the types of knowledge and skill that they possess regarding the uses of language and literacy in working with knowledge for doing something or learning something. For instance, developing job-related reading task tests (JRTT) using the materials from literacy task analyses (The Bottom Line, 1988 ) can permit the assessment of how much of the content knowledge in some job or work-related domain the worker knows and how well the worker can apply information search, comprehension strategies, and study skills to locate and learn knowledge that is not known. Administering JRTT as pre-and post-tests will permit an assessment of how much improvement has occured in workplace reading skills.

While JRTT can indicate something of the growth of job-related literacy abilities, they do not permit comparisons of growth in one program with growth in another program by other workers. Yet the Department of Education needs to know how well programs perform relative to one another. For this reason, it is necessary to use one or another nationally normed, standardized literacy tests as pre- and post-program measures of the generalizability of growth (see Sticht, 1990 for an extended discussion of standardized testing in the context ot the Department of Education's adult basic education program).

In using such tests, care should be taken to not over estimate the growth that has taken place. This may happen if very large increases in test performance are obtained. For instance, if a worker makes a two to five year improvement in test scores in a 20 to 100 hour program, the gain should be suspected as inflated due to faulty testing circumstances at the pre-test, post-test, or both. For

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1 It should be noted that some indicators of productivity may increase due to increased morale when a company shows employees that it cares enough to provide them an educational opportunity. Thus, a workplace literacy program may have an effect on productivity even when there is little or no measurable improvement in literacy abilities.

this reason, frequency distributions of pre- and post-test scores should be reported, not simply means or medians. The latter conceal the variablity in the gain scores that evaluators can use to judge the extent to which testing artifacts may be influencing test performance.

**Measuring Improvements in Productivity.** The ultimate goal of the NWLP is to improve the productivity of the workforce through the improvement of worker's literacy abilities. For this reason, after providing convincing evidence that improvements have taken place in literacy abilities, the workplace literacy provider needs to present convincing evidence that the improvements in literacy have lead to improvements in job productivity. If the materials and tasks used in the literacy program are direct simulations of tasks involving the use of literacy abilities on the job, then the JRTT or other literacy assessments *are* direct indicators of increased productivity in performing the literacy-mediated components of job tasks.

As Figure 2 indicates, it is important to distinguish those aspects of productivity that can be shown to be directly mediated or affected by literacy abilities and those that are capable of being affected by factors other than increases in literacy abilities (see footnote on page 9). *Workplace literacy programs should only be held accountable for improving those aspects of productivity directly mediated by literacy abilities.* And even then care should be exercised in building expectations for the effects of literacy education on productivity. Too many other factors, such as poor supervision, bad managment practices, substance abuse, and so forth may influence productivity to expect improved literacy to overcome any and all productivity problems. Workplace literacy providers should not promise more than they can be certain of delivering when it comes to improving productivity.

One of the most frequently used methods of evaluating changes in productivity is to have supervisors provide pre-and post-program ratings of improvements in such factors as attendance, lateness for work, accuracy in performing job tasks, reductions in errors or wastage of material, compliance with safety rules, or other types of indicators of productivity. While this information is useful in evaluating the effects of literacy education on productivity, it is subject to the criticisms of subjective ratings given above. In this regard, it is useful to have ratings of literacy program participants and non-participants from supervisors who do not know which employees have been involved in literacy training. This reduces the likelihood of positive bias for program participants on the part of the supervisors.

If possible, company records of performance appraisals of participants before the literacy training and after should be obtained and summarized. Records of waste, returned products, customer complaints and other objective indicators of productivity should be sought to support the rating information. Additional examples of productivity measures can be found in the list of resources included with this paper.

**Developing an Attitude for Inquiry.** As stated at the outset, one of the goals of evaluation is to permit the improvement of programs, not to simply decide if they work or not. The gathering of the types of information discussed in this paper should be undertaken in the spirit of inquiry - always questioning, seeking information, and using that information to modify programs to make them more effective. Programs that seek to instill the love of lifelong learning in the workforce by starting learners off with the first steps into workplace literacy, should themselves exhibit positive attitudes toward learning - learning what they are doing, how they are doing it, and what might be done to improve what they are doing. Programs that hope to make critical thinkers of others should become models of critical thinking themselves. Good evaluation requires critical thinking, continuous learning, and thorough documentation to permit others to properly place a high value on good works.

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