DOCUMENT RESUME

ED 393 013 CE 071 243

AUTHOR Mikulecky, Larry; Lloyd, Paul
TITLE Evaluation of Workplace Literacy Programs. A Profile of Effective Instructional Practices.
INSTITUTION National Center on Adult Literacy, Philadelphia, PA.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO NCAL-TR-96-03
PUB DATE Apr 96
CONTRACT R117Q00003
NOTE 57p.
AVAILABLE FROM National Center on Adult Literacy, University of Pennsylvania, Publications, 3910 Chestnut Street, Philadelphia, PA 19104-3111 (order no. TR96-03).
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Adult Education; Adult Literacy; Educational Research; *Literacy Education; Program Effectiveness; Program Evaluation; Student Attitudes; *Workplace Literacy

ABSTRACT

A study of 10 groups of learners in workplace literacy programs at 6 companies was used to develop and refine a data-based model for evaluating workplace literacy programs. The learners (n=181) completed pre- and post-assessments. In a structured one-on-one interview, information was gathered on learners' beliefs about literacy and their own literacy effectiveness. The interviews also focused on literacy practices and learners' plans for 1, 5, and 10 years ahead. To measure job-specific literacy processes and abilities, all site coordinators participated in the development of job-related scenarios based on workplace reading materials. They also provided information about curriculum and classroom practices. An analysis of the aggregated results compared curriculum and classroom practice with the impact of each program and used analysis of variance to determine which program practices lead to success and in what areas. The programs were most effective at improving learners' literacy performance, literacy strategies and processes, and learners' beliefs and plans related to literacy. The analysis of variance allowed development of a data-driven profile of thresholds for effective program practices. This profile suggests that these gains are linked to an environment intense with the use of workplace reading and writing materials, and providing regular discussion and feedback to learners' literacy processes, beliefs about personal literacy effectiveness, and future educational plans. Appendixes include a list of 17 references, list of course characteristics, learner results, and instruments used to gather learner data. (YLB)

NCAL

NATIONAL CENTER ON ADULT LITERACY

EVALUATION OF WORKPLACE LITERACY PROGRAMS

A PROFILE OF EFFECTIVE INSTRUCTIONAL PRACTICES

Larry Mikulecky
Paul Lloyd
Indiana University, Bloomington

NCAL Technical Report TR96-03
April 1996

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NCAL TECHNICAL REPORT TR96-03
APRIL 1996

This work was supported by funding from the National Center on Adult Literacy at the University of Pennsylvania, which is part of the Education Research and Development Center Program (Grant No. R117Q00003) as administered by the Office of Educational Research and Improvement, U.S. Department of Education, in cooperation with the Departments of Labor and Health and Human Services. The findings and opinions expressed here do not necessarily reflect the position or policies of the National Center on Adult Literacy, the Office of Educational Research and Improvement, or the U.S. Department of Education.

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The National Center on Adult Literacy (NCAL) was established in 1990 by the U.S. Department of Education, with co-funding from the Departments of Labor and Health and Human Services. The mission of NCAL addresses three primary challenges: (a) to enhance the knowledge base about adult literacy; (b) to improve the quality of research and development in the field; and (c) to ensure a strong, two-way relationship between research and practice. Through applied research and development and dissemination of the results to researchers, policymakers, and practitioners, NCAL seeks to improve the quality of adult literacy programs and services on a nationwide basis. NCAL serves as a major operating unit of the Literacy Research Center at the University of Pennsylvania.

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EVALUATION OF WORKPLACE LITERACY PROGRAMS:

A PROFILE OF EFFECTIVE INSTRUCTIONAL PRACTICES

Larry Mikulecky
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Abstract

This study of ten groups of learners in workplace literacy programs was used to develop and refine a data-based model for evaluating workplace literacy programs. The model addresses both the programs' need for custom-designed assessment and researcher/funder needs to aggregate data across several small programs. An analysis of the aggregated results compared curriculum and classroom practice with the impact of each program, and used analysis of variance to determine which program practices lead to success and in what areas. The programs were most effective at improving learners' literacy performance, literacy strategies and processes, and learners' beliefs and plans related to literacy. The analysis of variance allowed the development of a data-driven profile of thresholds for effective program practices. This profile suggests that these gains are linked to an environment intense with the use of workplace reading and writing materials, and providing regular discussion and feedback related to learners' literacy processes, beliefs about personal literacy effectiveness, and future educational plans.

INTRODUCTION

Over the three years of this project, studies of ten groups of learners in workplace literacy programs have been used to gather data on the impact of the programs in the areas of learner gains and workplace improvements. These data have been analyzed by comparing curriculum and classroom practice with the impact of each program, and using analysis of variance to determine which program practices lead to success and in what areas.

Evaluation of workplace literacy programs is a relatively new area, with its own unique set of problems. Courses are usually short (30–40 hours), curricula often focus on workplace-specific literacy tasks, and groups of learners tend to be small (10–15). Therefore, the kinds of assessment methods used for schools—standardized tests of generalized reading abilities conducted on hundreds of students—are inappropriate in this context. The present study uses a new evaluation model that was developed to assess changes in a variety of learner characteristics, from the ability to read workplace materials to the increased definiteness and detail of future plans in relation to literacy and education. The model includes a core of common assessment measures used by all programs, and a structure within which other measures can be custom-designed for each program. This mixture allows program assessment to focus upon specific literacy tasks (which change from workplace to workplace), while at the same time assessing program impact upon learners' literacy practices, aspirations, and attitudes. The shared items and shared structure of custom-designed items make possible an initial attempt at merging data across programs so that patterns of program impact might be identified. Lack of an assessment approach flexible enough to address program differences and small class sizes has heretofore prevented most workplace literacy program analysis beyond that of individual programs.

Moreover, there currently exists little systematic inquiry that might reveal the effectiveness of this approach or assist practitioners in determining the conditions under which it might be most useful.

This report provides a brief overview of the nature of native language literacy instruction for adults, the reasons provided by practitioners for offering it, and avenues of inquiry that might further the field. The first section introduces readers to key characteristics of adult native language literacy programs around the United States, based on survey data. In the second section, we describe what we have found to be five key reasons for offering native language literacy. These are based on the literature, evidence provided by interviews with expert practitioners, and, when it exists, the research. In the third section, several potential directions for further research are suggested and various constraints and limitations associated with conducting research with this group of learners are discussed.

BACKGROUND

Only a few workplace literacy programs described in the research literature report any form of rigorous program evaluation or careful documentation of learner gains, impacts on productivity, and detailed descriptions of effective program practices (e.g., Haigler, 1990; Hargroves, 1989; Mikulecky & Strange, 1986; Philippi, 1988, 1991; Sticht, 1982; Sticht, 1995).

The above examples are atypical. Mikulecky and d'Adamo-Weinstein (1991) observe that the majority of workplace literacy programs described in the available research literature tend to report no rigorous evaluation data. Many programs that do report evaluation data simply provide superficial information limited to surveys of learner satisfaction and anecdotal reports of effectiveness. Occasionally a pre and post administration of a standardized reading test (usually the Test of Adult Basic Education—TABE, or the Adult Basic Learning Examination—ABLE) provide an indication of learner gain in general reading ability. Only a few evaluations provide follow-up data on the impact of programs on learners' job performance, retention, or earning power.

Kutner, Sherman, Webb, and Fisher (1991) reviewed workplace literacy programs funded by the U.S. Department of Education in order to determine the elements of effective programs. In order to identify components of effective programs, the authors examined 29 of 37 projects funded by the National Workplace Literacy Program in order to determine which programs were effective and merited further examination. The authors reported that

Due to the absence of quantitative data necessary to identify particularly effective projects (i.e., improved productivity, low participant attrition, or improved test scores), study sites were recommended to OVAE staff. These sites were reported by project directors to have a high retention rate. (p. 26)

Even in federally funded workplace literacy programs, for which program evaluation was an expectation for receiving funding, it was not possible to find six programs that had been rigorously evaluated for effectiveness. Selection of "effective" programs was based upon undocumented reports of retention from program directors.

Many evaluation procedures assumed as normal in year-long school programs are extremely difficult—and sometimes impossible or inappropriate—for workplace programs. In some programs, privacy issues preclude testing of any sort. In programs where testing is possible, it is rare for a standardized literacy test to be used as more than an initial screening device. In any case, it is hard to justify the use of general standardized literacy tests for the typical workplace situation: small classes of brief duration where instruction is often targeted on job-related literacy needs.

Workplace courses tend to be brief (2–5 hours of instruction per week for 6–8 weeks, and sometimes even less) and involve small groups of learners (10–15) with few similar courses taking place at the same time. It is often impossible to gather data on more than 15 subjects taking part in a particular course of instruction. Also, finding a comparable group of workers as a

control can present problems in a workplace where many different training courses are going on, because some of these are likely to overlap with the course being evaluated, thus making it difficult to find a group of workers who have not received some recent instruction that relates to the course being evaluated.

Standardized reading tests measure general literacy ability and are usually used in schools to assess changes following daily instruction over a full school year. Such tests are rarely sensitive enough to assess changes over shorter time periods. Given the brevity of workplace literacy courses, their curriculum is necessarily limited and often concerns specialized workplace skills and competencies, rather than a broad range of general literacy skills. In this situation, standardized tests of general reading ability are unlikely to show much change in learners' performance and are not often used by businesses. In order to show what learners have gained, workplace course evaluations need to use measures that are custom-designed to assess what has been taught. This may involve measuring the learners' ability to use workplace reading materials and to perform their jobs more effectively. An obvious measure of the latter is a worker's job productivity, but few organizations keep data of this kind on individuals—the smallest unit tends to be the work team. The most practical measures of individual workplace competence are employee rating scales (usually filled out by supervisors) and job-related reading scenarios. And both of these need to be custom-designed for particular workplaces.

However, solving the problem of assessment in one workplace generates problems for the researcher who wants to compare gains made at different sites and enlarge the sample size in a study by amalgamating results across programs. The workplace-specific measures, while providing useful information on each workplace, are necessarily different from each other, and introduce difficulties of comparison across programs. Given these difficulties, the National Center on Adult Literacy (NCAL) Workplace Literacy Impact project was designed to pilot and refine an evaluation model that employed a broad definition of literacy, that could be sensitive to the differing literacy demands of a variety of workplaces, and that allowed for comparisons of results across programs. The model was based on an overall structure consisting of some assessments common to all workplaces and of a framework within which program personnel could custom-design instruments suitable to their instruction and workplaces, while keeping an element of comparability with the assessments used at other programs.

CONCEPTUAL FRAMEWORK

The conceptual framework for this workplace literacy impact assessment model is based upon a broad understanding of literacy. In addition to assessing improved performance with a variety of literacy tasks, the model also assesses changes in life-style related to literacy and changes in learners' self-perceptions and aspirations in relation to literacy. The model owes much to ideas presented and developed by Lytle (1990) in long-term case studies of changes in adults experiencing success in adult literacy programs. It was also influenced by ideas about perceptions of self-efficacy developed by Bandura (1986) and others who

have studied why some individuals outperform others who have similar tested abilities.

Lytle (1990) has suggested that performance measures (tests and exercises) miss a good deal of important information about adult literacy learning. Lytle has examined the literacy growth of adults enrolled in adult literacy programs. Extensive observations, interviews, and learner journals were used to track changes that took place as learners spent a year in adult literacy instruction. Lytle found that in addition to gains in literacy skills, adults tend to make changes in their beliefs, behaviors, and aspirations. These changes are intertwined and seem to influence each other. For example, new understanding about the process of how reading and writing work may influence beliefs about what the learner can accomplish. Changes in aspirations resulting from an increased sense of effectiveness sometimes lead to increased practice and increased competence. Lytle suggests several dimensions that constitute a fuller understanding of adult literacy and adult literacy growth. These dimensions are learners' *beliefs* about literacy and themselves, learners' literacy *practices*, the literacy *processes* employed by learners while reading, and the *plans* a learner has that may involve literacy use. Programs and assessments that focus merely upon performance are likely to miss the complex, intertwined mixture of changes in (a) self-perception, (b) literacy life-style, (c) understanding of the literacy process, and (d) hopes and aspirations, all which are necessary elements in improving and sustaining literacy performance.

Lytle's conceptual framework has been adapted to the present workplace literacy project in order to test the importance of these aspects of adult learning: beliefs, practices, processes, and plans, and in order to seek out ways to enhance learning. Information about these dimensions of learners' literacy were gathered using a combination of questionnaire items, interview questions, and requests that learners explain their literacy strategies or processes while involved in simulated job tasks.

Bandura (1986) has written extensively about the influence upon performance of self-perception of one's effectiveness. His concept of *perceived self-efficacy* has been used to examine the performance of children and adolescents in school, as well as to examine the performance of adults in a variety of life situations from athletic competitions to success in substance abuse treatment programs to academic and career success. Results of several studies with adults experiencing phobic reactions led Bandura to note, "People who are burdened by acute misgivings about their coping capabilities suffer much distress and expend much effort in defensive action" (Bandura, 1986, pp. 425-426). Adult literacy researchers (Bean, Partanen, Wright, & Aaronson, 1989; Van Tilburg & DuBois, 1989) have noted such distress leading to poor performance and abandoning of programs by adults receiving literacy instruction. Perceived self-efficacy (based upon accurate feedback) is particularly important in relation to adult literacy learning. Adults with high and accurate perceptions of their personal literacy abilities tend to try harder, to continue in the face of obstacles, and to succeed more often than learners of comparable tested ability but lower senses of personal effectiveness with literacy. While learners with low senses of personal effectiveness tend to subvert their own efforts with self-doubt and excuses for quitting, learners with higher senses of effectiveness often perform successfully and continue to learn as a result of persistence. Some other studies (Shunk & Gunn, 1985;

Shunk & Rice, 1987) have also demonstrated that interventions that are designed to improve children's perceptions of their effectiveness with literacy strategies are associated with improved literacy performance. In the workplace literacy program impact model discussed in this study, Lytle's conception of learners' beliefs about literacy is expanded to focus more specifically upon beliefs about personal effectiveness with literacy.

METHOD

The purposes of this study were (a) to gather data on the effectiveness in a variety of areas of a number of workplace literacy programs, and (b) to compare those results with the nature of the instructional practices in the programs. This comparison was intended to reveal specific connections between teaching and learning practices and learner gains in the several areas related to workplace literacy in our workplace literacy impact model. The focus of the model's assessment is on changes in learners' beliefs about personal effectiveness with literacy, changes in learners' literacy practices, learners' literacy improvement with general and workplace materials, and changes in learners' goals.

Project personnel worked with on-site coordinators at each company to develop instruments using model guidelines. These instruments were designed to assess the effect of the literacy courses on the learners' own literacy behaviors and on their work competency. For the first of these, Lytle's literacy model (Beliefs, Practices, Process, Plans) was used as a basis for structuring measurement of learner change (Lytle, 1990). During structured pre- and post-interviews, learners were asked about themselves and their abilities in relation to literacy, about their reading and writing practices, about how they read print materials, and about their future educational plans. Pretest data were gathered at the start of each course and posttest data toward the end. All data were then sent in to the project for analysis. In addition, discussions with instructors, classroom observations, and analysis of curricular materials provided a foundation for rating instructional emphases at each worksite.

In order to analyze the results of the ten groups of learners, rating schemes were constructed to summarize the characteristics of each course and its curriculum, in such areas as emphasis on workplace examples, reading and writing intensity, and discussion of literacy beliefs and plans. Comparisons between these course-characteristic ratings and learner-gain scores have been used to identify program characteristics that produce learner gains, and analysis of variance has been used to indicate workplace literacy program practices that lead to success within the various components of the workplace literacy impact model.

POPULATIONS: LOCATIONS AND SUBJECTS

The ten groups of learners (n = 181) attended workplace literacy programs at six companies and completed pre- and post-assessments. No program administered pre and post standardized reading tests, although two programs used such tests during initial screening. Reading ability ranges in these programs were similar to those in high school classes (i.e., from high elementary school levels to beginning college levels). Age ranges for students

were from the low 20s to over 60, with the majority of students between 25 and 45 years of age. The typical student had been with the current employer for more than a decade. Details of the companies and instructional groups follow.

Site #1 is a large manufacturing plant, where three courses were conducted:

Technical Preparation—a 6-week, 7-hours-per-day course designed to prepare employees for subsequent technical training;
GED—meeting for 4 hours per week over 6 weeks; and
ESL—meeting for 8 hours per week over 6 weeks.

For the first of these, there was a control group made up of workers who had not yet begun the Technical Preparation course. Each of the four groups consisted of 12–15 employees.

Site #2 is a women's prison, where correctional officers and other staff attended the following course:

Report Writing—28 staff were in class 3 hours per week for 13 weeks, learning how to improve the quality of the reports that they need to write as an integral part of their work; and
Promotions Support—9 staff spent 3 hours per week for 7 weeks in enhancing the skills that they need to apply for promotion, including preparation for a promotion test.

Site #3 is a small insurance company, where a group of 20 learners was improving skills in job-related tasks connected with reading and writing. Some attended class for 20 hours and completed a similar amount of work outside class, while others worked with self-study packages supplemented by individual help sessions with an instructor. All were engaged in their studies for about 40 hours in total.

Site #4 is a hospital, where 19 service employees attended a computer-based writing course for 20 hours, plus up to 10 more hours of out-of-class practice. They were learning the basics of word-processing and, at the same time, working on their study and writing skills, particularly for writing memos.

Site #5 is a large gasket-maker, where data were gathered on 10 learners in basic reading and writing courses. These learners attended two courses in sequence, for a total of 50 hours. They practiced reading workplace materials such as newsletter articles, procedure manuals, and productivity graphs. They were taught how to fill out forms, complete logs, and take notes at a meeting.

Site #6 is a manufacturer of electric motors, where reading skills enhancement courses were conducted for the employees. The goal was to raise the reading level of all employees to at least the eighth-grade level. Data were gathered on 33 learners, who attended class for 30 hours. They were taught a variety of reading strategies, such as questioning, summarizing, reviewing, skimming, and scanning.

INSTRUMENTS

Data were collected for each learner before and after each course, or at suitable intervals for ongoing courses. In a one-on-one structured interview, information was gathered on learners' beliefs about literacy in general and their own literacy effectiveness in particular. The interviews also focused on literacy practices and learners' plans for 1, 5, and 10 years ahead. In these three areas, the same questions were asked at all programs. To measure job-specific literacy processes and abilities, all site coordinators participated in the development of job-related scenarios based on workplace reading materials. Also, the site coordinators provided information about curriculum and classroom practices, so that ratings could be developed to compare the characteristics of the different courses.

The interview and job-related scenarios used in this analysis were just part of a wider range of instruments that form part of the full evaluation model developed in this project. Other instruments include questionnaires on frequencies of literacy practices and employee job performance ratings. (For a full set of instruments, see Appendix C.)

INTERVIEW: GENERAL

An interview protocol was devised to cover the four aspects of Lytle's model. Three of these aspects—practices, beliefs, and plans—were tested using open-ended questions that applied to all learners at all sites. Concerning literacy practices, learners were asked about their reading and writing, both at work and away from work. A typical question is the following:

> "Tell me the sorts of things you read and write on the job during a normal week."

This was followed up with a non-directive prompt ("Can you give me more examples?"), which was repeated several times until the learner had no more to add. Concerning their beliefs, learners were asked to describe their perceived level of literacy, and what it might become in future. One set of questions was the following:

> "How good do you consider yourself to be at reading and writing? What makes you think so?"

Finally, learners were asked about their future plans, for 1, 5, and 10 years ahead, and how they saw reading and education as part of those plans. For example:

> "Now I'd like to ask you about your plans. Explain how you see reading and education as part of these plans. What are your plans for the next year?"

JOB-RELATED SCENARIOS

The fourth aspect of Lytle's framework—reading process—was assessed using site-specific job-related scenarios. Three different job-related items (i.e., a newsletter article, a graph, and a chart or procedure) were selected with the advice of the site coordinators. The subjects were presented with these workplace materials, and asked to go over them and describe how they read

(i.e., reading strategies, areas of focus, thoughts while reading). All learners were asked essentially the same question in each scenario about how they read the materials:

> " I am going to show you a newspaper article about your industry. I want you to explain to me how you would read it. There are many ways to read. People look at different parts of a page and think about different things when they read. What would you do first, then next, then next?"

After reading, they were asked to answer factual, inference, and application questions about the specific contents of the reading materials.

Data Gathering Procedures

The interview and job scenarios were conducted by a researcher one-on-one with a learner. The researcher asked each question and made notes on the learner's responses, pausing long enough to obtain a considered answer and using standard non-directive prompts and probes to elicit a more extensive response. The time taken for each individual interview was in the range 20–30 minutes. These interviews were conducted as pretests at the start of each course and as posttests at the end.

Data Analysis Techniques

Data analysis was of two types: category and holistic. Quantifiable interview responses were recorded and analyzed statistically. Responses to open-ended interview questions were recorded, and then methods of analysis were developed to fit the nature of the responses.

For some open-ended interview questions, categories of responses were allowed to emerge from the data. These categories were then used to label subject comments. When category refinement allowed for acceptable levels of interrater agreement (90% or higher), category responses were recorded and statistically analyzed. For other open-ended interview questions, a holistic comparison was made between pretest and posttest responses, and the change was rated as positive, neutral, or negative. As with the category schemes, the criteria for assessing this change emerged from the data, and the application of the scheme was subject to the same levels of acceptable interrater agreement.

Examples of both category and holistic rating schemes arose in connection with the interview question: "How good do you consider yourself to be at reading and writing? What makes you think so?" Responses to this open-ended question nearly always included spontaneously some kind of self-rating, using words such as *average*, *very good*, *below average*, and *poor*. These were categorized from lowest to highest on a scale of 1–5, to produce a score for each self-rating. In addition, a holistic rating was applied to the full response, in which change from pretest to posttest was judged as positive, neutral, or negative according to the reasons given by the subject for the reported self-image. An example to illustrate this process follows:

> *Pre*: I'm not very good at reading and writing—not much education.

Post: I'm about average. I'm not stupid. I can read and write—I can figure things out.

For this response, the self-ratings were 2 for the pre-interview and 3 for the post-interview, and the holistic rating was positive because of the change from low to higher self-esteem.

The other area in which a holistic rating was used related to subjects' plans for the future. These were judged on their definiteness and detail, as the following example illustrates:

Pre: I don't know. I might go to tech school in a couple of years.

Post: I'm going to school—four nights a week in the fall.

This too was rated positive, because of the change from vague intentions to a definite decision.

For any of the responses which resulted in numerical scores (e.g., materials read during a week at work or scores for scenario questions), statistical tests were applied to the set of scores for each group of subjects. Pre- and post-assessments were compared for the individuals in a course using a paired-sample *t*-test, in order to detect gains brought about by the program. In addition, for the holistic change scores, the allocation of values +1, 0, and -1 to positive, neutral, and negative allowed the use of a one-sample *t*-test to determine if the changes were significantly different from 0. In all cases, as the tests were of *no difference* versus *improvement*, the statistical tests were one-tailed.

COURSE CHARACTERISTICS RATINGS

For the analysis of variance described below, it was necessary to construct rating schemes to summarize the instructional characteristics of each course and its curriculum. These covered such areas as emphasis on workplace examples, reading and writing intensity, focus on improving literacy processes and strategies, and discussion of literacy beliefs and plans. The site coordinators provided syllabi, assignments, and other curriculum documents, together with descriptive observational information about the teaching methods of the teachers at their sites. Using these materials, the ratings were completed by two researchers, who then compared results, discussed differences in ratings when these occurred, referred back to on-site coordinator notes and curriculum documents as necessary, and then reached consensus on the ratings.

Combining data across programs is always problematical. In an ideal world, data would be combined only for students receiving identical instruction and being assessed with identical measures. The second of these is easier to achieve than the first in any situation, but—in this workplace study—neither is strictly true. However, all learners did receive instruction in literacy aimed at improving their abilities in reading and writing, which argues for at least as much commonality as, for example, in a study of high school seniors and their academic performance.

In fact, the programs and courses that took part in this project had much in common. All programs were based in workplaces and set out to increase the

literacy skills of those workers attending. All addressed increasing the literacy and communications competence of the learners in order to help them deal with practical situations in the workplace and everyday life. All classes were small (10–15 learners) and included much individual attention on particular learner problems. Also, within the wider context of schooling, all courses were brief. Most were of 20–50 hours duration, and the one exception included 200 hours of instruction, which corresponds to only 6 or 7 weeks of high school.

Also all learners were assessed within the framework of the evaluation model. This assessment included many elements common to all programs, and those measures—the job-specific scenarios—that differed in topic from program to program were all constructed to the same pattern. The three custom-designed scenarios for each workplace included a range of factual, inference, and application questions, and included prose, document, and quantitative materials. Thus, a compromise was achieved, which allowed site specific assessment appropriate to each program and, at the same time, made it arguably feasible to aggregate data across programs in order to identify patterns.

As with most instruction, there was enough variation among the programs to allow an analysis of the effects of those differences on learner gains. Although all programs were quite brief compared to K–12 schooling and all addressed workplace literacy goals, the content of the materials varied. Some concentrated very specifically on workplace skills and materials, while others employed a greater proportion of more general literacy materials. As with instruction in schools, there were differences in the teaching styles employed: from a mix of lecture, learner practice, and discussion to more structured learning modules with occasional conferences with the teacher. The percentage of class time spent practicing reading and writing or in discussion of reading strategies or the relevance of instruction to future goals also differed somewhat from class to class. In order to encapsulate these differences, six factors were chosen to characterize the various courses. They cover three aspects of course practices:

- Time — total instructional time and time spent on reading and writing,
- Topic — workplace and home/family orientation of instruction, and
- Talk — discussion of literacy beliefs and plans and of reading and writing processes.

The six factors are listed below together with abbreviated labels for their use. .

Factors for Rating Course Characteristics	
1. Hours	Instructional time in hours—course meetings + homework
2. R/Wr	Reading/writing intensity—0–5 scale with descriptors*
3. Work	Workplace orientation—0–5 scale with descriptors
4. Home	Home/family orientation—0–5 scale with descriptors
5. DiscB/P	Discussion of literacy beliefs and plans—0–5 scale with descriptors
6. DiscProc	Discussion of reading and writing processes—0–5 scale with descriptors

(* For details of all descriptors, see Appendix A.)

Although anchor points were different for the various scales, the two examples given below are typical.

3. Workplace Orientation	
Curriculum and materials:	
0	have no direct connection with the workplace
1	use workplace examples occasionally
2	use workplace examples sometimes (20–30% of time)
3	use workplace examples much of the time (50–60% of time)
4	are connected mainly to the workplace (70–80% of time)
5	are connected entirely to the workplace (90–100% of time)

5. Discussion of Literacy Beliefs and Plans:	
0	does not occur in this course
1	occurs occasionally/incidentally in this course
2	occurs as a deliberate part of this course
3	occurs moderately often in this course (every other session)
4	occurs often in this course (most sessions)
5	occurs very often in this course (every session)

The three aspects of Time, Topic, and Talk were chosen to characterize the courses because of their importance in the workplace context. Most workplace literacy programs are brief (20–50 hours) and therefore need to be targeted on very specific goals. Thus, total time is of the essence in determining what can be achieved, as is the amount of time spent practicing reading and writing. Because of the limited nature of transfer from one area of application to another, it is also important to know what kinds of topics are used to teach literacy in these programs. The use of workplace examples is more likely to carry over to job-related scenarios than the use of more general material. Finally, due to the

limited time available, learners are unlikely to make connections on their own about generalizable reading strategies or about self-esteem and future plans.

The six course characteristic scales were then applied to each course using syllabi, assignments, and other curriculum documents, together with classroom observations and descriptive information about teaching methods. The results of this process are contained in Table 1.

Table 1

Ratings of Course Characteristics

FACTOR COURSE	HOURS	R/WR	WORK	HOME	DISCB/P	DISCPROC
Site#1: Automotive						
Tech Prep	200	3	2	1	2	2
Control	0	0	0	0	0	0
GED	24	5	1	1	1	1
ESL	48	2	2	2	3	2
Site#2: Women's prison						
Report Writing	40	4	4	0	2	5
Promotions	20	4	5	1	3	2
Site#3: Insurance	40	5	4	1	1	4
Site#4: Hospital	20	5	1	1	2	3
Site#5: Gasket-maker	50	4	4	1	1	3
Site#6: Electric motors	30	3	1	2	1	5

For one of the rating scales listed in Table 1(Home/family orientation), nearly all courses were rated 0 or 1, showing that this area did not play a significant part in the curricula of the courses under consideration. Therefore, this factor is not used in the later analysis.

In order to investigate any possible connections among the rating scales as causes for learner gains, the ratings were applied to each learner in the sample according to the course attended, and the correlations between the rating scales were calculated on a sample of 181 learners. Several of these correlations were statistically significant, but none were very large. For example, the highest correlations were (a) 0.604 between Reading/writing intensity and Workplace orientation, (b) 0.409 between Workplace orientation and Discussion of beliefs and plans, and (c) 0.351 between Reading/writing intensity and Discussion of reading processes.

Even so, this suggested that factor analysis should be used to establish whether some of the course characteristics could be combined into more useful constructs. The results of this process, however, revealed no clear grouping of the course characteristics within the factors generated, so it appears that each of the rating scales used in this study involves a separate instructional factor in the courses under investigation.

A second approach toward simplifying the picture of course characteristics involved trying to establish course profiles, into which several courses would fit. Differences in instructors' styles across the course characteristics did not allow for any clear generalization in this direction.

LEARNER GAINS

The course characteristic ratings were then compared with the gain scores (see below) of each individual learner in all of the courses pooled together, in the areas evaluated by the learner interview. Those areas are as follows:

1. Practices at work
2. Practices away from work
3. Reading process
4. Scenario performance
5. Beliefs (literacy self-efficacy)
6. Plans

(For details of the calculation of these scores, see Appendix B.)

For Items 1–3, each learner's gain score is the difference between a pretest and a posttest score. Item 4, scenario performance, is based on the sum of scores on site-specific reading scenarios; because topic materials were different for each program, the scores on each scenario were standardized before being combined with the other scenarios. For Items 5 and 6, the gain scores are based on a direct comparison of pretest and posttest interview responses. With the exception of Item 4, each area of learner gain was assessed using the same questions for all courses at all programs.

ANALYSIS OF VARIANCE

The technique of analysis of variance (ANOVA) was used to compare the gains of those groups of learners having high ratings on particular course characteristics with those having low ratings on that characteristic. This indicates which course characteristics play important roles in determining whether or not learners make gains in each area. In addition, patterns across courses can suggest the threshold level of the activity related to that characteristic (i.e., use of workplace materials or discussion of literacy processes) that is required to produce measurable learner gains in various areas of the workplace literacy program impact model. Although this process is only an initial attempt to identify patterns across programs, it can allow some tentative insights about a desirable mixture of course activities that will produce learner gains in a variety of areas related to workplace literacy competence.

The division between high and low ratings for each characteristic was determined by first carrying out analyses of variance with all characteristic ratings separate. Where inspection showed a change in the level of learner gain at a particular point on the characteristic scale, this was investigated further, in a subsequent analysis of variance, by combining all the groups of learners below that point and comparing them with all the groups of learners above that point. The authors investigated all possible pairings of course characteristics with areas of gain, but the results set out below show only those for which there is a statistically significant difference between the high- and low-rated groups.

Before proceeding with the details of the divisions, a somewhat surprising observation must be noted. The division between high and low ratings for each characteristic that is paired with more than one area of gain occurs nearly always at the same point on the characteristic scale, regardless of the area of gain being analyzed. For example, the characteristic *Discussion of literacy beliefs and plans* is paired with the three areas of gain *Scenario performance*, gain in *Beliefs* about one's own literacy abilities, and gains in the specificity and detail of future educational *Plans*. In each case, the change in the level of learner gain occurred at the same point of division between low and high ratings of *Discussion of literacy beliefs and plans*, suggesting that thresholds of activity may indeed be relevant.

The divisions for all course characteristics are shown in Table 2.

Table 2

High and Low Ratings of Course Characteristics

Course characteristic	Division Rating		Description	Number of subjects
Instructional time in hours	low	0–50	up to 50 hours	165
	high	200	over 50 hours	14
Workplace orientation	low	0, 1	little connection with workplace	85
	high	2–5	use workplace examples at least 20–30% of time	95
Discussion of literacy beliefs and plans	low	0, 1	at most occasional/ incidental	95
	high	2, 3*	deliberate part of course	85
Discussion of reading and writing processes	low	0, 1	at most occasional/ incidental	27
	high	2–5	deliberate part of course	153
Reading/writing intensity 1	low	0–3	up to 50% of time	65
	high	4, 5	over 50% of time	96
Reading/writing intensity 2	low	0–4	up to 70% of time	127
	high	5	over 70% of time	53

* ratings of 4 and 5 did not occur

RESULTS

The areas of learner gains described above were compared with the course characteristic ratings, and cut-points in the rating scales were identified at which the amount of learner gain changed significantly. Using these divisions into high and low ratings on the course characteristics, we have the statistically significant ANOVA results set out below. In each case, the following information is given: first, the area of gain, the course characteristic, and the level of significance for the difference between the low

and high groups (p =xxx); then, for each group, a description of the division into low and high ratings, the number of subjects (n), the mean gain and standard error (s.e.) of that mean, and the resultant significance of gain for that group; and finally, the standard deviation (s.d.) of each group. This last is to verify that the variances of the low and high groups are always approximately equal—a necessary condition for the validity of analyses of variance. The findings from each case are listed:

Practices Away From Work **divided according to** ***Instructional time in hours*** **(p = 0.0120)**

Division	n	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (0-50 hr)	165	0.121	0.180	n.s. (p = 0.2507)	2.311
high (200 hr)	14	1.786	0.764	sig. (p = 0.0181)	2.860

- The learners with 200 instructional hours (the Tech Prep group at Site #1) made significant gains in reading practices away from work, but all the other learners with 50 hours or less, did not.

Reading Process **divided according to** ***Reading/writing intensity 2*** **(p = 0.0003)**

Division	n	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (≤70% of time)	127	0.945	0.316	sig. (p = 0.0017)	3.560
high (>70% of time)	53	3.491	0.755	sig. (p < 0.0001)	5.497

- Although both the high- and low-rated learners made significant gains in increased self-reported sophistication in the reading processes that they would employ, the learners who spent over 70% of their course time reading and writing had a mean gain that was over three times that of the other learners.

Scenario Performance **divided according to** ***Workplace orientation*** **(p = 0.0179)**

Division	n	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (<20% of time)	85	0.858	0.214	sig. (p < 0.0001)	1.976
high (≥20% of time)	95	1.622	0.234	sig. (p < 0.0001)	2.276

- Although both the high- and low-rated learners made significant gains on job-related scenario comprehension questions, the learners who used workplace examples in class at least 20–30% of the time had a mean gain on the reading scenarios that was nearly twice that of the other learners.

Scenario Performance **divided according to** ***Discussion of beliefs and plans*** **(p < 0.0001)**

Division	n	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (incidental)	127	0.945	0.316	sig. (p = 0.0017)	3.560
high (deliberate)	53	3.491	0.755	sig. (p < 0.0001)	5.497

- Although both the high- and low-rated learners made significant gains on job-related scenario comprehension questions, the learners who had discussions of literacy beliefs and plans as a deliberate part of

their course had a mean gain on the reading scenarios that was nearly three times that of the other learners.

***Scenario Performance* divided according to *Discussion of reading processes* (p = 0.0008)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (incidental)	27	-0.015	0.331	n.s. (p = 0.4827)	1.718
high (deliberate)	153	1.486	0.175	sig. (p < 0.0001)	2.165

- The learners who had discussions of reading and writing processes as a deliberate part of their course made significant gains on the reading scenarios, but the other learners did not.

***Beliefs* divided according to *Discussion of literacy beliefs and plans* (p < 0.0001)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (incidental)	92	0.120	0.104	n.s. (p = 0.1255)	0.993
high (deliberate)	85	0.812	0.095	sig. (p < 0.0001)	0.880

- The learners who had discussions of literacy beliefs and plans as a deliberate part of their course made significant gains in the area of beliefs and perceived self-efficacy in relation to literacy, but the other learners did not.

***Plans* divided according to *Reading/writing intensity 1* (p = 0.0355)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (<20% of time)	85	0.858	0.214	sig. (p < 0.0001)	1.976
high (≥20% of time)	95	1.622	0.234	sig. (p < 0.0001)	2.276

- The learners who spent over 50% of their course time reading and writing made significant gains in the area of specific, detailed future plans, but all the other learners did not.

***Plans* divided according to *Workplace orientation* (p = 0.0111)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (<20% of time)	69	0.174	0.169	n.s. (p = 0.1535)	1.403
high (≥20% of time)	92	0.750	0.147	sig. (p < 0.0001)	1.411

- The learners who used workplace examples at least 20–30% of the time had a mean gain in the area of plans, but all the other learners did not.

***Plans* divided according to *Discussion of literacy beliefs and plans* (p < 0.0001)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (incidental)	77	0.039	0.157	n.s. (p = 0.4026)	1.381
high (deliberate)	84	0.929	0.147	sig. (p < 0.0001)	1.351

- The learners who had discussions of literacy beliefs and plans as a deliberate part of their course made significant gains in the area of plans, but the other learners did not.

***Plans* divided according to *Discussion of reading processes* ($p = 0.0141$)**

Division	*n*	Mean gain	S.e. of mean	Significance of gain	S.d. of gain
low (incidental)	27	-0.111	0.222	n.s. ($p = 0.3106$)	1.155
high (deliberate)	134	0.627	0.126	sig. ($p < 0.0001$)	1.454

- The learners who had discussions of reading and writing processes as a deliberate part of their course made significant gains in the area of plans, but the other learners did not.

It can be seen that, in all of the cases set out above, there is a significant difference between those groups with low ratings and those with high ratings. Also, those groups with high ratings made significant gains, compared with no gains or smaller gains for those with low ratings.

Discussion of Results

The classroom practices related to each of the characteristic rating scales considered above will now be examined, and these practices will be compared with the areas of gain that are connected with them. The course characteristics are *Instructional time in hours*, *Reading/writing intensity*, *Workplace orientation*, *Discussion of literacy beliefs and plans*, and *Discussion of reading and writing processes* (see Appendix A for definitions).

Instructional time in hours is a factor only in relation to learner gains in reading practices away from work. This result depends on the fact that the Tech Prep group at Site #1 (who received 200 hours of instruction) made gains in this area and other learners did not. Although this could be an aberration caused by this one group, it may be a threshold effect due to the much greater time that these learners spent in class. Gains in practices could be longer term in taking effect than those in other areas.

Reading/writing intensity (i.e., percentage of class time spent reading and writing) appears to be related to gains in learners' reporting of more sophisticated reading processes, and more detailed and specific educational plans. The cause for the positive impact on forming detailed educational plans is not clear, but there is an obvious link between the practicing of reading and writing, and gains in the sophistication of reading techniques. From the analysis of variance, it seems that quite a high level of reading/writing intensity is required to achieve this: Gains remain relatively small in classes that report less than 70% of instructional time dedicated to reading and writing. In classes with 70% or more of instructional time allocated to reading and writing practice, gains are considerably higher.

Workplace orientation of materials and instruction is related to learner gains in answering comprehension questions on workplace scenarios and in forming detailed educational and literacy-related plans. The gains in plans may be due to a workplace orientation making explicit the link between future planning and job advancement. The connection between use of workplace materials in the classroom and success with assessments based on workplace materials is more direct: It is simply "test what you teach." For both areas of gain, the level of use

of workplace materials need not be very high—20–30% of course time—but it does need to be more than incidental, built into the structure of the course.

Classroom discussion and feedback related to perception of personal effectiveness with literacy (i.e., *beliefs*) and future educational plans (i.e., *plans*) are related to learner gains in answering comprehension questions on workplace scenarios, and in articulating learners' own literacy-related beliefs and plans. Improvement in personal sense of literacy effectiveness and more detailed educational plans are directly connected to feedback and discussion of these subjects in class. Providing feedback and talking about learners' beliefs and plans does appear to produce changes in their attitudes. The comprehension gains on the scenarios may be related to an increase in motivation to succeed, caused by raised levels of belief in oneself (self-efficacy) and by a more definite view of where education might lead. Bandura (1986) has shown that the willingness to attempt and persist with a task is related to "perceived self-efficacy"—the belief in self and ability to succeed, which can give a learner the confidence to continue in the face of difficulties. If these ideas are made explicit in classroom discussions and if learners are provided with feedback about their growing effectiveness, these learners seem more likely to develop the persistence that will give them a better chance of performing well at new literacy tasks. From the analysis of variance, it appears that it is important for such discussions to be an integral part of the learners' instructional experience, rather than incidental. This does not mean including discussions of literacy beliefs and plans in every course session, but it does mean that these discussions should be frequent enough to inform the ongoing process of education. Courses where such discussions were planned demonstrated much larger gains than those where discussions of literacy beliefs and plans were left to chance.

Classroom discussion and feedback related to reading and writing processes appear to affect learner gains in answering comprehension questions on workplace scenarios and in forming detailed educational plans. The cause for the impact on learners' plans is not clear, but discussing literacy processes has an obvious connection with the ability to understand and answer questions about new reading materials. From the analysis of variance, it seems that such discussions need to be an integral part of the learners' course, rather than incidental, but do not need to occur in every course session. It is sufficient for these discussions to happen often enough to inform the ongoing process of reading and writing.

Taking these course characteristics together, it seems reasonable to hypothesize the following structure for a workplace literacy course to be a success in a wide variety of areas. It should include a large proportion of time when learners practice reading and writing (70–80% of course time) and a substantial proportion of workplace examples (about 30% of course time). Integrated into this, but without detracting from the reading and writing practice time, there should also be planned regular discussion both of learner beliefs and plans concerning literacy and of reading and writing processes. With such a mix, the results above suggest that learners ought to make gains in their reading abilities and sophistication of strategy knowledge, in their beliefs in their own literacy effectiveness, and in their abilities to plan for a future connected to literacy and education. In addition, for longer running

courses (i.e., 200 hours), changes in learners' everyday literacy practices may also be expected.

CONCLUSION

This three-year study was designed to determine the feasibility of developing a workplace literacy assessment model that could produce information both of use to local program providers and capable of aggregation across programs.

The study has demonstrated the feasibility of implementing the assessment model at a variety of sites. The inclusion in the model of a mixture of common assessment instruments used at all programs and a framework for developing customized instruments for each program has allowed for the variations in job materials used and in skills being taught at the different workplaces. Also, employing a broad conception of literacy makes it possible to be sensitive to program variations and to demonstrate program gains even when evaluation constraints are very limiting.

The feasibility of aggregating data across sites has been demonstrated, but this must be viewed with a good deal of caution. Although the variation in instructional approaches in workplaces may not be much greater than the variation found in schools, this variation must be weighed in interpreting the results of aggregating data. Similarly, one must consider whether differences in adult ages and work site experiences are so great as to compromise the wisdom of aggregating data. On the other hand, teachers in large high schools who teach students from diverse ethnic and social class backgrounds might argue that working adults have more shared experience in common than adolescents coming from such diverse homes—and we regularly aggregate data from such students.

The majority of data in this study comes from assessment questions that were exactly the same at all sites. Aggregating data from these items is relatively easy to justify. For items custom-designed for each program, the issue is less clear. The common framework of the evaluation model makes such items comparable in some sense, but there may be differences in difficulty level. For example, aggregating literacy performance data from several different custom-designed scenarios is problematical, but arguably acceptable when scores are standardized. Continued research in this area, beyond these beginning steps, is obviously needed.

Allowing for all the above cautions and caveats, patterns across programs suggest some useful connections between the instructional uses of time and learner gains in a variety of literacy-related areas. The analysis of variance suggests that gains in (a) literacy performance on scenarios, (b) beliefs about personal effectiveness with literacy, and (c) clarity and definiteness of future educational plans are strongly linked to an environment intense with the use of workplace reading and writing materials, and providing regular discussion and feedback related to learner literacy processes, beliefs about personal literacy effectiveness, and future educational plans.

It is conceivable and indeed likely that the focus and motivation provided by improved self-perceptions and aspirations will provide significant future benefits as learners choose additional educational experiences, attempt more literacy challenges, and slowly accrue more experience and practice with literacy. The improvement of literacy practice in the single 200-hour course suggests that such longer term gains are attainable, though not necessarily in brief, isolated programs.

The brief duration of most workplace literacy programs and the limited degree of instructional transfer make it mandatory that program providers have clear goals for what they want to achieve in the limited time that learners are in class. Among the goals should be helping learners develop, through discussion and feedback, clearer senses of their own improving literacy abilities, broader senses of the literacy strategies available to them, and stronger links between what they are currently learning and future occupational and educational choices. Since time is so short in the courses, instructors should also be seeking ways to extend this time beyond the classroom. One way of doing this is to use on-the-job materials in class so that learners are more likely to continue practicing outside class time. Also, encouraging learner motivation and independence is likely to lead to learners engaging more often in literacy-related activities.

Although data for this study were carefully gathered over a period of three years and across programs in several industries, the small sample sizes available in most workplace literacy programs somewhat limit the findings. Findings are also limited by the fact that longitudinal follow-up of learners was not possible. As a result, questions about the impact of changed literacy beliefs and aspirations upon future literacy practices and abilities remain undocumented.

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APPENDIX A

COURSE CHARACTERISTICS

(Assessed by researchers for each course.)

Time:	1. Instructional time in hours—course meetings + homework
	2. Reading/writing intensity—0–5 scale with descriptors
Topic:	3. Workplace orientation—0–5 scale with descriptors
	4. Home/family orientation—0–5 scale with descriptors
Talk:	5. Discussion of literacy beliefs and plans—0–5 scale with descriptors
	6. Discussion of reading and writing processes—0–5 scale with descriptors

Descriptor

1. Instructional time in hours (not applicable)

2. Reading/writing intensity

Learner reading/writing:

- 0 does not happen in this course
- 1 happens occasionally/incidentally in this course
- 2 happens sometimes in this course (20–30% of time)
- 3 happens moderately often in this course (40–50% of time)
- 4 happens often in this course (60–70% of time)
- 5 happens very often in this course (more than 80% of time)

3. Workplace orientation

Curriculum and materials:

- 0 have no direct connection with the workplace
- 1 use workplace examples occasionally
- 2 use workplace examples sometimes (20–30% of time)
- 3 use workplace examples much of the time (50–60% of time)
- 4 are connected mainly to the workplace (70–80% of time)
- 5 are connected entirely to the workplace (90–100% of time)

4. Home/family orientation

Curriculum and materials:

- 0 have no direct connection with the home/family
- 1 use home/family examples occasionally
- 2 use home/family examples sometimes (20–30% of time)
- 3 use home/family examples much of the time (50–60% of time)
- 4 are connected mainly to the home/family (70–80% of time)
- 5 are connected entirely to the home/family (90–100% of time)

5. Discussion of literacy beliefs and plans:

- 0 does not occur in this course
- 1 occurs occasionally/incidentally in this course
- 2 occurs as a deliberate part of this course
- 3 occurs moderately often in this course (every other session)
- 4 occurs often in this course (most sessions)
- 5 occurs very often in this course (every session)

6. Discussion of reading and writing processes:

0 does not occur in this course
1 occurs occasionally/incidentally in this course
2 occurs as a deliberate part of this course
3 occurs moderately often in this course (every other session)
4 occurs often in this course (most sessions)
5 occurs very often in this course (every session)

APPENDIX B

LEARNER RESULTS: AREAS OF GAIN

For most areas, each learner's gain score is the difference between the pretest and the posttest scores obtained from the sources described below. The exception is the use of holistic scores in the areas of Beliefs and Plans: Here the gain score is the sum of two or three holistic ratings each scored as 1, 0, or -1 according to whether each learner showed gain, no change, or loss. (See Mikulecky & Lloyd, 1993, for details of the instruments used to obtain these responses.)

1. Practices at Work

Count of items reported in Interview as read or written at work in last week

2. Practices Away From Work

Count of items reported in Interview as read or written away from work in last week

3. Reading Process

Total count of strategies mentioned for reading workplace scenarios

(most courses assessed with 3 scenarios, but some with 2 only)

4. Scenario Performance

Total score for workplace scenario content questions, with scores on each scenario standardized before being combined*

(most courses assessed with 3 scenarios, but some with 2 only)

5. Beliefs

Sum of holistic ratings comparing pre- and post-responses for learners' perception of literacy effectiveness and future literacy aspirations—comparisons based on learner self-rating comments and quality of reasons given for learner self-assessments (i.e., concrete mention of specific literacy abilities, activities, and interests)

6. Plans

Sum of holistic ratings comparing pre- and post-responses for 1-year plans, 5-year plans, and 10-year plans—comparisons based on clarity, definiteness, and detail of plans mentioned, particularly in relation to reading and education

* For each scenario, pretest and posttest scores were pooled and these were standardized as a single sample in order to avoid losing any differences between pretest and posttest scores—and hence any learner gains.

The table below shows the mean, standard deviation, and range for each variable considered above.

Variable	Mean	Standard Deviation	Range
Practices at work	0.128	2.459	-10–7
Practices away from work	0.251	2.391	-6–8
Reading process	1.694	4.365	-9–24
Scenario performance	1.261	2.168	-4.2–7.3
Beliefs	0.452	1.000	-2–2
Plans	0.503	1.432	-3–3

APPENDIX C

INSTRUMENTS USED TO GATHER LEARNER DATA

Note that parts of the instruments shown below were used at all sites, and parts were custom-designed for particular sites within an overall framework. For these latter parts, examples only are given—and are labeled as such. Note also that, to save space, the gaps for learner responses have been reduced from their original sizes.

LEARNER INTERVIEW

Personal Information:

Name: _____ Date: _____

What class are you in? _____

Job you do _____

I'd like to ask you some questions about reading, writing, and education. The answers to these questions will give us an idea of the way reading and writing are used here.

Beliefs

1. Describe someone you know who is good at reading and writing. What makes you choose this person?

2. How good do you consider yourself to be at reading and writing? What makes you think so?

3. Describe how you would like to be in terms of reading and writing.
   (*Probe* : Could you give me some examples?)

Practices

1. Tell me the sorts of things you read and write away from work during a normal week.
   (*For probe, ask:* "Can you give me more examples?")

2. Tell me the sorts of things you read and write on the job during a normal week.
(*Use probe above for more examples.*)

Process: Article (Example from one site)

1. I am going to show you an article from the Employee Handbook. Explain to me how you would read this story in order to find out what the writer thinks.
(*Show attached article* "**A Message from The Chairman and CEO**".)
Describe what you would look at. What would you be thinking about? How would you go about reading this story? What would you do first, then next, then next?

2. (easy factual question)
How many customers does the company serve?

3. (harder factual question)
Name one industry that uses the company's products.

4. (easy inference question)
How does the company help to provide stable employment to workers?

5. (harder inference question)
How is the company's leadership demonstrated?

6. (harder application question)
What prospects do you see for the growth of the company?
Give reasons for your answer.

7. (easy application question to end the section)
As an employee how would the chairman's message motivate you?
Give reasons for your answer.

A Message from The Chairman and CEO

Our company is very fortunate to have almost 10,000 good customers throughout the United States, Canada, and more than 30 other countries. These customers have been remarkably loyal throughout the years and we're adding more every week.

Our success depends to a great extent on our ability to please these customers. What pleases customers is good quality, on-time delivery, fair prices and fair treatment. We do our best to provide all of these and you are an important part of this.

We serve many different markets, all the way from machine tool manufacturers, to farm machinery manufacturers, to distributors who supply replacement motors to industries of all kinds. This has helped us provide more stable employment than if we were to serve just one or two industries.

While we supply only 4 or 5% of all the motors produced in the United States, we are a well-known manufacturer in this field. As a matter of fact, we're one of the leaders in several ways. For example, much recognition has been achieved recently in the area of high-efficiency motors which not only conserve energy, but save considerable amounts of money for people buying and using our motors.

We want you to be proud of your company, as I am. We welcome your ideas, your support and your helping to produce more and better motors.

Sincerely

Chairman and CEO

Process: Procedure/Job Aid (Example from one site)

1. I am going to show you an instruction sheet. Explain to me how you would read it in order to find out what it's about.
   (*Show attached instruction sheet*, "**Hand Washing**".)
   Describe what you would look at. What would you be thinking about? How would you go about reading this instruction sheet? What would you do first, then next, then next?

2 (easy factual question)
   What should you do if your skin becomes dry and infected after washing your hands frequently?

3. (harder factual question)
   What kind of soap must be in a container that will drain?

4. (easy inference)
   Look at drawings 4, 5 and 6. What is the point of the drawings?

5. (harder inference)
   What are the reasons for using paper towels on the hand washing instruction sheet?

6. (harder application)
   Why does it say in step #1 of the Procedure, DO NOT FILL SINK?

7. (easy application question to end the section)
   Explain two jobs which you perform that require hand washing before or after the job.

X. INFECTION CONTROL

C. HANDWASHING

Required Supplies and Equipment:

Hand Brush, Paper Towels, Soap (bar, liquid, powder), Running water

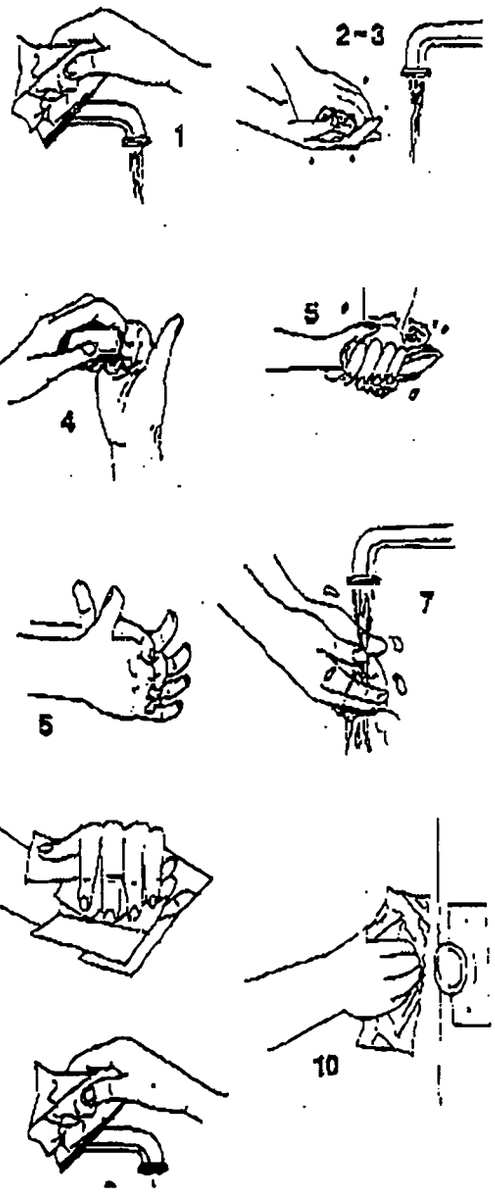
Safety Precautions:

1. Always use paper towels to turn faucets on and off.
2. If you have any cuts or other skin breaks you must wear gloves.
3. Skin may become dry and may become infected, because of frequent hand washing, therefore, apply lotion after washing.
4. Follow hand washing procedure step by step — do not take any short cuts.
5. Where bar soap is used, it must be in a container that will drain, rinse soap off before using.
6. Use clean brush.

Procedure:

1. Take paper towel and turn on faucet. DO NOT FILL SINK.
2. Wet hands.
3. Apply soap thoroughly — get under nail and between fingers.
4. Use clean brush to remove any substances offering particular resistance.
5. Rub hands together. Use a rotating frictional motion. Count to 20.
6. Interlace the fingers. Rub up and down.
7. Rinse well under running water.
8. Dry with paper towel.
9. Turn off faucet, using paper towel
10. Open door with paper towel before disgarding towel.

PROCEDURE:



Process: Graph (Example from one site)

1. I am going to show you a graph. Explain to me how you would read this graph in order to find out what it's about.
   (*Show attached graph.* "**Payment Scores vs Class Average**").
   Describe what you would look at. What would you be thinking about? How would you go about reading this graph? What would you do first, then next, then next?

2. (easy factual question)
   What is the graph about?

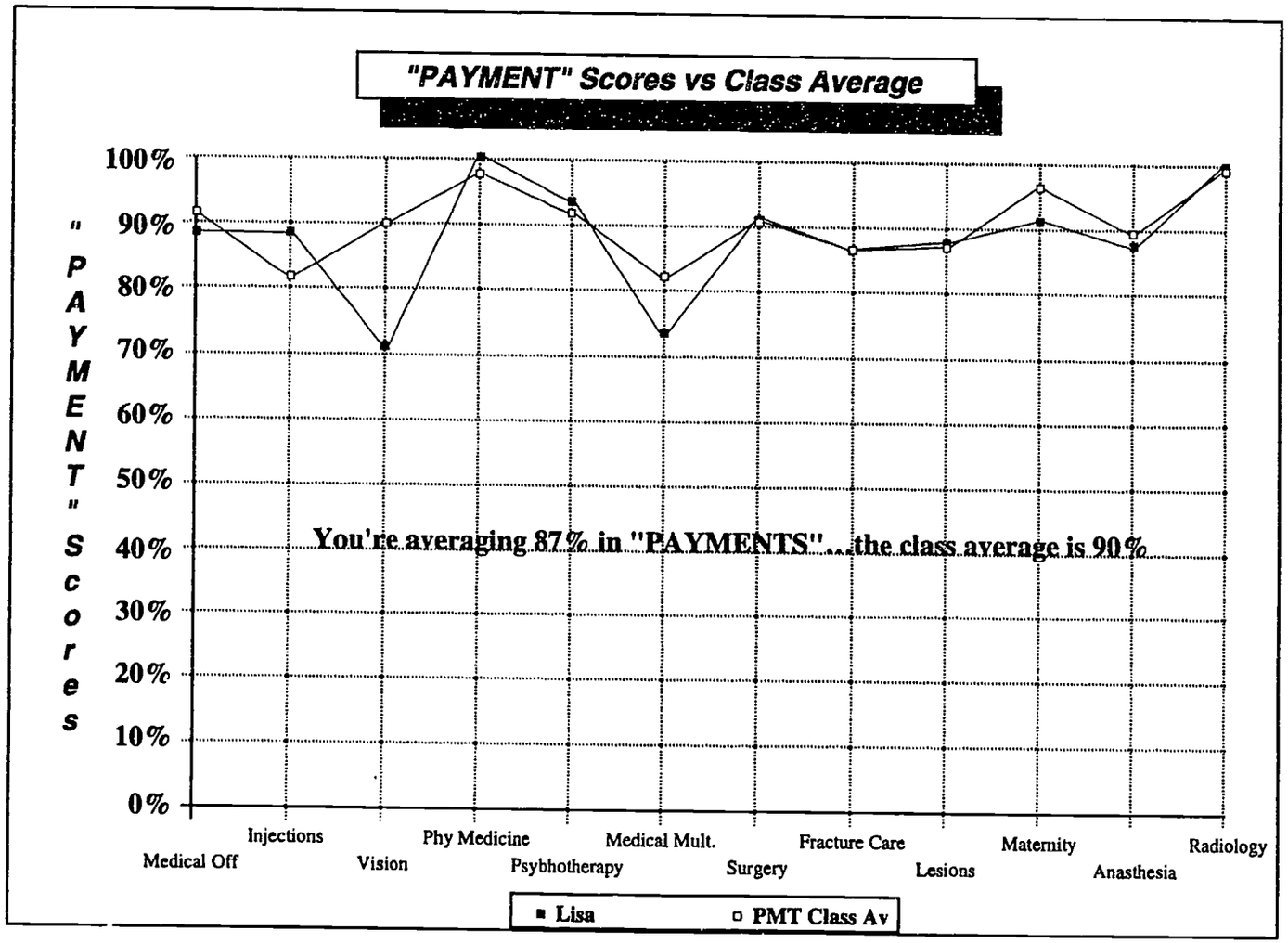
3. (harder factual question)
   What comparison is being made on the graph?

4. (easy inference)
   In how many areas is Lisa higher than the class?

5. (harder inference)
   Overall in what areas does Lisa need to improve her payments most?

6. (easy application question)
   Is Lisa more knowledgeable about some insurance benefits than others? Give reasons for your answer.

7. (more difficult application question)
   Which areas are you best at? Give reasons why you think so.
   Which areas are worst for you? Why do you think so?


"PAYMENT" Scores vs Class Average
"PAYMENT" Scores
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
You're averaging 87% in "PAYMENTS"...the class average is 90%
Medical Off
Injections
Vision
Phy Medicine
Psybhotherapy
Medical Mult.
Surgery
Fracture Care
Lesions
Maternity
Anasthesia
Radiology
Lisa
PMT Class Av

Plans

Now I'd like to ask you about your plans. Explain how you see reading and education as part of these plans:

1. What are your plans for the next year?

2. What are your plans for the next 5 Years?

3. What are your plans for the next 10 Years?

LEARNER QUESTIONNAIRE

Name: _____ Age: _____ Sex: _____

Education: ___ (furthest year in school) Training _____

Marriage Status: _____

Children: (number) _____ (ages) _____

Practices: Self rating reading ability

I. 1. First check only the things you've read in the past month.
2. Now go back and rate your ability to read the items you've checked.

		poor				excellent
__	local newspapers	1	2	3	4	5
__	classified ads	1	2	3	4	5
__	telephone bills	1	2	3	4	5
__	TV guide listings	1	2	3	4	5
__	magazines	1	2	3	4	5
		poor				excellent
__	training guides	1	2	3	4	5
__	paycheck stubs	1	2	3	4	5
__	company newsletters	1	2	3	4	5
__	benefit information	1	2	3	4	5
__	graphs and charts	1	2	3	4	5

(For items 11-15, workplace personnel chose appropriate items of reading material. The following are examples only)

		poor				excellent
__	*procedure manual*	1	2	3	4	5
__	*inter-office memos*	1	2	3	4	5
__	*notes from supervisor*	1	2	3	4	5
__	*computer screens*	1	2	3	4	5
__	*computer printouts*	1	2	3	4	5

Practices: Reading frequency

Please *check* the number of times you have done the following:

1. **In the last 7 days** how many times have you used a TV guide listing to select programs?

0	1	2	3	4	5	6	7	8	9	10+

2. In the last 7 days how many times have you read a newspaper?

0	1	2	3	4	5	6	7	8	9	10+

3. In the last 7 days how many times have you read a magazine?

0	1	2	3	4	5	6	7	8	9	10+

4. In the last 7 days how many times have you read a book for pleasure?

0	1	2	3	4	5	6	7	8	9	10+

5. In the last 7 days how many times have you read the following types of books?

mystery: __ times how-to books: __ times

novels: __ times factual books: __ times

poetry: __ times encyclopedia: __ times

Bible: __ times comic books: __ times

other types: _____ __ times

_____ __ times

6. How often do you make a shopping list before you go to the store?
___ never ___ occasionally ___ often ___ always

7. When you're waiting in an office, how often do you read magazines?
___ never ___ occasionally ___ often ___ always

8. Do you subscribe to any magazines? ___ yes ___ no

If yes, which ones? _____

9. How many different magazine titles do you have in your home?

0 1 2 3 4 5 6 7 8 9 10+

10. How many books are in your home, either owned or borrowed?

0 10 20 30 40 50 60 70 80 90 100+

Practices: Literacy at work

Please circle the number which best describes you in the situations below:

(1) You just listen in team or department meeting discussions.

very like me 1 2 3 4 5 very unlike me

(2) You talk a lot in team or department meetings, asking questions or sharing ideas.

very like me 1 2 3 4 5 very unlike me

(3) Your ideas are often discussed in team or department meetings.

very like me 1 2 3 4 5 very unlike me

(4) You wait for others to talk about written information, just to be sure what is in it.

very like me 1 2 3 4 5 very unlike me

(5) You look for printed directions to help figure out what to do when a problem arises.

very like me 1 2 3 4 5 very unlike me

(6) You often have trouble reading paperwork from management.

very like me 1 2 3 4 5 very unlike me

(7) When the booklet about new health benefits arrived, you read it carefully.

very like me 1 2 3 4 5 very unlike me

Practices: Family Literacy

Only answer the following questions if you have a child between the ages of 3-17 at home.

Please answer for your youngest child in this age group and please fill in only one answer per question:

1. This child is ____ years old.

2. **In the last 7 days** how many times has your child looked at or read books or magazines?

0 1 2 3 4 5 6 7 8 9 10+

3. In the last 7 days how many times has your child seen you readi .g or writing?

0 1 2 3 4 5 6 7 8 9 10+

4. In the last 7 days how many times have you helped your child with homework and/or with school projects?

0 1 2 3 4 5 6 7 8 9 10+

5. In the last 7 days how many times have you read/looked at books with your child or listened to him/her read?

0 1 2 3 4 5 6 7 8 9 10+

6. In the last 7 days how many times has your child asked to be read to?

0 1 2 3 4 5 6 7 8 9 10+

7. In the last 7 days how many times has your child printed, made letters, or written?

0 1 2 3 4 5 6 7 8 9 10+

8. **In the last month** how many times has your child gone to a public library?

0 1 2 3 4 5 6 7 8 9 10+

9. In the last month how many times have you participated/helped out in your child's school?

0 1 2 3 4 5 6 7 8 9 10+

Practices: Family Literacy (cont.)

10. In the last month how many times have you hung up or displayed your child's reading and writing efforts?

0 1 2 3 4 5 6 7 8 9 10+

11. In the last month how many times have you bought or borrowed books for your child?

0 1 2 3 4 5 6 7 8 9 10+

12. (Please check only one.)
I expect my child to finish at least:

__6th grade __9th grade __high school __two-year college __4-year college or more

LEARNER QUESTIONNAIRE (addendum)

For Year 3 of the project, the questionnaire was revised in order to evaluate learner practices better. The following questions replaced those above on practices at work and practices away from work.

Please ***check*** the number of times you have done the following:

1. **In the last 7 days** how many times have you read a company newsletter or bulletin board?

0 1 2 3 4 5 6 7 8 9 10+

2. In the last 7 days how many times have you used a manual?

0 1 2 3 4 5 6 7 8 9 10+

3. In the last 7 days how many times have you read a memo or letter?

0 1 2 3 4 5 6 7 8 9 10+

4. In the last 7 days how many times have you used a graph or chart?

0 1 2 3 4 5 6 7 8 9 10+

5. In the last 7 days how many times have you used an instruction sheet?

0 1 2 3 4 5 6 7 8 9 10+

6. In the last 7 days how many times have you written a note to a co-worker?

0 1 2 3 4 5 6 7 8 9 10+

(For questions 7 - 10, workplace personnel chose appropriate items of reading material. The following items are examples only)

7. In the last 7 days how many times have you used *a job order form* ?

0 1 2 3 4 5 6 7 8 9 10+

8. In the last 7 days how many times have you used *a route sheet* ?

0 1 2 3 4 5 6 7 8 9 10+

9. In the last 7 days how many times have you used a *computer screen* ?

0 1 2 3 4 5 6 7 8 9 10+

10. In the last 7 days how many times have you used *a blueprint* ?

0 1 2 3 4 5 6 7 8 9 10+

Questionnaire: Practices at work (cont.)

11. How often do you have difficulties with the paperwork in your job?

___ never ___ occasionally ___ often ___ always

12. How often do you wait for others to talk about written information, just to be sure what is in it?

___ never ___ occasionally ___ often ___ always

13. How often do you have trouble reading paperwork from management?

___ never ___ occasionally ___ often ___ always

14. When a problem arises, how often do you look for printed directions to help figure out what to do?

___ never ___ occasionally ___ often ___ always

15. How often are you able to help when someone has trouble reading something?

___ never ___ occasionally ___ often ___ always

16. How often do you talk in team or department meetings, asking questions or sharing ideas?

___ never ___ occasionally ___ often ___ always

17. How often are your ideas discussed in team or department meetings?

___ never ___ occasionally ___ often ___ always

Questionnaire: Practices away from work

Please ***check*** the number of times you have done the following:

1. **In the last 7 days** how many times have you read a newspaper?

0 1 2 3 4 5 6 7 8 9 10+

2. In the last 7 days how many times have you read mail, bills or ads?

0 1 2 3 4 5 6 7 8 9 10+

3. In the last 7 days how many times have you read a magazine?

0 1 2 3 4 5 6 7 8 9 10+

4. In the last 7 days how many times have you read a book for pleasure?

0 1 2 3 4 5 6 7 8 9 10+

5. In the last 7 days how many times have you read in order to do something? (For example: buy, build, cook, fix)

0 1 2 3 4 5 6 7 8 9 10+

6. In the last 7 days how many times have you discussed something you've read with another person?

0 1 2 3 4 5 6 7 8 9 10+

7. In the last 7 days how many times have you written notes to people you live with?

0 1 2 3 4 5 6 7 8 9 10+

8. In the last 7 days how many books have you brought into your home, either bought or borrowed?

0 1 2 3 4 5 6 7 8 9 10+

9. In the last 7 days how many times have you read the following types of books ?

mystery: __ times	how-to books: __ times
novels: __ times	factual books: __ times
poetry: __ times	encyclopedia: __ times
Bible: __ times	comic books: __ times
other types: _____ __ times	_____ __ times

10. When you're waiting in an office, how often do you read magazines?

___ never ___ occasionally ___ often ___ always

11. How often do you make a shopping list before you go to the store?

___ never ___ occasionally ___ often ___ always

CLOZE EXERCISE (Example from one site)

Name _____ Date _____

In a cloze exercise, you try to guess which words are missing. For example, in the sentence below, a word is missing.

She looked before she _____ the street.

A good guess for the missing word is "crossed."

She looked before she crossed the street.

In the story below, try to guess and replace the missing words. Don't expect to get them all. Some are nearly impossible.

G.M Designs Safety for All Ages

We all like to think about the old days. Life seemed simpler and, in some ways, better then. But when it comes to _____, the good old days _____ offer the same degree _____ safety as today's cars _____ trucks. Advancements in technology _____ the G.M. vehicle you _____ today among the safest _____ the world. Each G.M. _____ and truck is backed _____ thousands of dedicated men _____ women who care about _____ safety of their customers. _____, as G.M. customers themselves, _____ have a stake in _____ G.M. vehicles the highest _____ quality and reliability.

And _____ you're wondering if safety _____ improved in recent years, _____ this: The classic 1955 _____ would require more than _____ major changes or additions _____ hundreds of incremental changes _____ be as safe as _____ vehicles.

From: Kilborn, C. GM Today (November/December, 1990), page 1.

EMPLOYEE ASSESSMENT - OVERALL RATING

(Examples from several sites)

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 _____

PAPERWORK

Bottom	Average	Top
intimidated by job-related paperwork and does it poorly	does job-related paperwork, simply keeping pace	completes all job-related paperwork and tries to improve procedures

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

PROCEDURES

Bottom	Average	Top
does not follow procedure in a step-by-step process, sometimes missing areas of the job	follows procedure most of the time, occasionally missing a step	follows step-by-step procedure

1 2 3 4 5 6 7 8 9 10

SAFETY PRECAUTIONS

Bottom	Average	Top
has to be reminded about safety and does not use caution on the job	takes precautions, but sometimes overlooks small areas on the job	follows safety precautions and understands why

1 2 3 4 5 6 7 8 9 10

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

COMMUNICATION

Bottom	Average	Top
doesn't talk about the job, doesn't speak at department meetings	talks about the job and offers suggestions at department meetings	talks about the job, has suggestions and shows leadership

1 2 3 4 5 6 7 8 9 10

QUALITY OF PAPERWORK

Bottom	Average	Top
paperwork provides no or limited information; illegible, poor grammar	paperwork usually acceptable; at times too brief or vague	paperwork is legible, detailed, clear and concise

1 2 3 4 5 6 7 8 9 10