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THE DEVELOPMENT OF AN INTEGRATED WORKPLACE LITERACY MODEL

By

Carl Jay Hultquist

A DISSERTATION

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ABSTRACT

THE DEVELOPMENT OF AN INTEGRATED WORKPLACE LITERACY MODEL

By

Carl Jay Hultquist

Workplace literacy has emerged as a major topic for discussion among business and education leaders during the last five years. Many business leaders see improvement of the literacy levels of their workforce as one solution to competing with other businesses; others as a revitalization tool for adult education, training and retraining programs; and still others, a cure for the unemployed and under-employed.

The purpose of this study was to develop a theoretical workplace literacy model that would contribute to the development of workplace literacy programs. Grounded theory methodology was used to develop a workplace literacy model for use by practitioners in business, industry, and education in their efforts to provide workplace literacy training. Analyses of existing models; content area analyses; observations of workplace literacy programs; interviews with educators, program administrators, various

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content experts; and expert reviewers provided the data for analysis and formulation of the theoretical model.

The workplace literacy model which emerged has three major phases: needs analysis; curriculum design and development; and program delivery. Each phase is integrated with other phases using a systems theory approach that focuses on the inputs to each phase and the outputs from each phase leading to the next phase and finally to the delivery of the workplace literacy training. Integration emerged as a key concept of the model. The integration of planning, needs analysis, assessment, curriculum design and development, delivery options and other components of the model and how they affect the inputs and outputs of each are crucial to the development of a practical, workable literacy program. The Integrated Model uses terms that are familiar to practitioners in the field, thus allowing for the inclusion of other formal theoretical knowledge and ease of use and adjustment for a particular workplace setting and context. The researcher found that the *analytical tools* used in this study would be useful to the practitioner when developing a workplace literacy program.

ACKNOWLEDGMENTS

I was most fortunate over the years of my doctoral program to have the advice of Dr. George Ferns, Dr. Charles Blackman, Dr. James Costar, and Dr. Rex Ray to guide me through the doctoral coursework that prepared me for the written comprehensive examination and, ultimately, to the completion of this dissertation and a doctoral degree from Michigan State University. I give much thanks to my committee members: Dr. Lois Bader, Dr. James Snoddy, Dr. Louis Romano, Dr. Peggy Reithmiller, Dr. Charles Blackman, and Dr. Gloria Kielbaso for their efforts in guiding me through this dissertation.

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Most of all, I thank my wife, Roxanne, for her support during my long years of preparation for the doctoral degree. She, having completed this delightful but grueling educational journey before me, was able to steer me around many of the innumerable obstacles that are encountered during the researching for and the writing of a dissertation. We are now ready for the next phase.

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CHAPTER I

OVERVIEW OF THE STUDY

Introduction

Workplace literacy became one of the major discussion topics of educational institutions and corporate boardrooms during the 1980s.

Position papers were written, legislative acts were passed, and books were authored, each describing the scope of the workplace literacy problem and proposed solutions. The debate over workplace literacy, its issues and its problems, continues into the 1990s. Business and industry claim that educational institutions are not preparing people for jobs in the workplace.

Many educators claim that young people are literate but that the skills that business and industry want are really job-specific skills that must be learned in the workplace. The workplace literacy crisis has been exacerbated by the economic recession of the late 1980s and early 1990s.

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Demand for higher quality products and services by U.S. business in order to compete with foreign firms has provided additional focus on improving employee skills.

Another factor contributing to the literacy crisis is the shrinking pool of young workers (18 - 24 years old). Declining birthrates during the 1960s and 1970s have reduced the availability of new workers to fill jobs (Johnson and Packer, 1987, p. xix) . Employer practices of screening large numbers of potential employees and selecting only those viewed as highly qualified has not been feasible as the pool of entrants to the workplace has declined.

Statement of the Problem

Although many models, programs, and solutions to the workplace literacy problem have been presented, the researcher did not find one that incorporates what he thinks to be sufficiently comprehensive and integrative. For example, during a literature review and in the researcher's experience with literacy program development at his work organization, it was not possible to find a literacy program model that included theory and practice from the related fields of cognitive sciences, evaluation methodologies, assessment practices, curriculum designs, instructional

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strategies, and implementation strategies that, in the researcher's opinion, represented a comprehensive integrated model. Most seem to focus on only some of those areas listed above. A comprehensive model that integrates theory and practice from the above listed fields could contribute to the many proposed solutions to the workplace literacy problem.

The purpose of this study was to develop a theoretical model for workplace literacy programs using grounded theory research of the content and structure of workplace literacy. Recent trends in business, education, and government have focused new attention on workplace literacy and its concomitant issues and problems. As a result, the researcher explored the current theory and practices of workplace literacy and the factors that determine its definition, contribute to its successful implementation, and ultimately, to its positive effects on American society. There is an array of literacy models and programs designed to address the needs of adult literacy in America, many that are very successful, others that offer only marginal evidence of addressing the problem of adult illiteracy. But only recently have programs and strategies appeared that address the problem of illiteracy in the workplace. This study was needed to examine the emerging methods, programs, and strategies of workplace literacy; analyze the premises and basic social processes involved; and to offer new insights into present

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theory and practice. The researcher's intention was to offer a workplace literacy model that is grounded in the theory and practice of the various contributing content areas.

Objective of the Study

The objective of this study was to create a workplace literacy model that could be used by business and industry as a theoretical tool to assist in the development and implementation of a workplace literacy program at their location.

Step One of the Study

Review relevant literature and conduct personal interviews on workplace literacy for current practices, theories, and initial categories using the qualitative methods of fieldnotes, memoing, and open coding.

Step Two of the Study

Identify additional categories, problems, and issues relating to workplace literacy, continuing to use personal interviews, fieldnotes, memoing and the grounded theory analysis methods of open coding, axial coding, and selective coding simultaneously.

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Step Three of the Study

Collect and review data on each of the major categories related to workplace literacy using personal interviews and document analysis. The researcher will continue the use of fieldnotes, memoing, and coding using an iterative process. The focus at this step of the study is axial coding.

Step Four of the Study

Identify the basic social processes and their relationships within the context of workplace literacy. The focus at this step of the study is on select coding.

Step Five of the Study

Construct an integrated workplace literacy model using data derived from the identification of each of the generalized social processes. Further coding procedures continue and the use of triangulation begins to validate the evolving theoretical story line.

Step Six of the Study

As the final step of the development of the workplace literacy model, selected experts in workplace literacy programs are asked to review the model and offer suggestions for improvement.

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Need for the Study

A number of trends are affecting current workers and future workers in America that must be addressed by America's schools and workplaces.

Among these trends are upscaling of the literacy requirements, downscaling of the hierarchical structure of the workplace, and shrinking of the workforce in numbers.

In *The Bottom Line: Basic Skills in the Workplace*, (DOE/DOL, 1988) Ann McLaughlin says in the PREFACE:

> We are rapidly approaching a new century and a vastly different labor market from the one we know. Major changes are already taking place. The number of new jobs is growing and most experts agree that the skill levels of many of these jobs will be rising. Employers will place a premium on higher levels of reading, computation, and reasoning skills. Such skills will be vital to our domestic economic growth, as well as our ability to compete abroad. The rapid turnover and change of industries and firms will often require workers to change jobs five or six times, transforming the traditional work culture of Americans. Workers will need to be more flexible - open to retraining and job mobility. Workers with poor basic skills will be ill-equipped for any change. A growing share of our workers will come from groups where human resource investments have been historically deficient - minorities, women, and immigrants. Employers will increasingly have to reach into the ranks of the less advantaged to obtain their entry - level workforce, frequently those with deficient basic skills.

In *Workforce 2000 Work and Workers for the 21st Century* (Johnson, Packer, 1987, p. xiii), four key trends are listed that will shape the last years of the twentieth century:

- *The American economy should grow at a relatively healthy pace,* boosted by a rebound in U.S. exports, renewed productivity growth, and a strong world economy.

- Despite its international comeback, *U.S. manufacturing will be a much smaller share of the economy in the year 2000* than it is today. Service industries will create all of the new jobs, and most of the new wealth, over the next 13 years.

- *The workforce will grow slowly, becoming older, female, and more disadvantaged.* Only 15 percent of the new entrants to the labor force over the next 13 years will be native white males, compared to 47 percent in that category today.

- *The new jobs in service industries will demand much higher skill levels* than the jobs of today. Very few jobs will be created for those who cannot read, follow instructions, and use mathematics. . . . Ironically, the demographic trends in the workforce, coupled with the higher skill requirements of the economy, will lead to both higher and lower unemployment: more joblessness among the least skilled and less among the most educationally advantaged.

In an article entitled "The Forgotten Half " (U.S. News & World Report, 1989 p. 45) it is stated:

> Two fundamental transformations have combined to give the nation's least educated workers an unprecedented role in the American economy. The first is the birth dearth. Since World War II, employers have enjoyed an overabundance of unskilled workers. Yet in many cities, particularly those on the East Coast, openings for electricians, secretaries, security guards, waiters, and auto mechanics are going begging because there aren't enough American workers to fill the jobs.

The move from Taylorism (complex tasks broken down into simple rote tasks that can be performed by unskilled workers) to high performance organizations that require workers to use judgment, problem-solving skills,

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and make independent decisions is being spurred on by competition around the world and the move from mass production to batch-processing. This move is creating increased literacy requirements in the workplace as the mid-level bureaucracy that supported de-skilled workers contracts.

An example of this phenomena is cited in *America's Choice: High Skills or Low Wages* (1990, p.33):

> The IBM executives also changed job classifications by reorganizing manufacturing slots into seven categories (manufacturing technical associates [MTA's] based upon skill requirements) . . . . Under the earlier organization the career track for a manufacturing worker ended after about five years. By contrast, the new MTA system provides opportunities for advancement through the fifteenth or twentieth year, with each level requiring a higher level of skill or responsibility.

Henry Ford started a revolution (mass production incorporating Tayloristic principles) that continued for most of the twentieth century which has only recently begun to change with the introduction of new technology.

In the book, *Closing the Literacy Gap in American Business* (Gordon, Ponticell, Morgan, 1990, p. 9), the authors state:

> During most of the twentieth century, manufacturers and service companies fine-tuned a production process that broke down each job so that it was performed with minimal formal education or job training. . . . "Dumbed down" jobs have required lower technical skills since the turn of the century (nineteenth to twentieth).

Sticht also points out the upscaling of literacy requirements for young adults in *Functional Context Education: Workshop Resources Notebook*

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(1987) in Figure 1.1 . In this figure, constructed from data from the 1985 National Assessment of Education Progress Study--*Literacy: Profiles of America's Young Adults* , it was shown that in 1886, close to 100 percent of young adults aged 21- 24 years of age could sign their name which was the standard of literacy at that time. By 1936, the literacy standard had changed to a 4th grade level. At this point, 95 percent of the 21- 24 group of adults still fell into this category. By 1966, during the *war on poverty* period, the 8th grade had become the standard for literacy and 80 percent of this same group fell into the literate category. By 1986, with a standard of literacy at the 11th grade, only 60 percent of this group are described as literate.

These trends over the last ten to twenty years (a) upscaling of literacy requirements for job performance, (b) work organizations becoming flatter or less hierarchical, and (c) the labor pool of young adults shrinking have caused a reexamination of America's training and education policies and practices.

Background

Since the 1984 publication *A Nation At Risk* by a task force appointed by the U.S. Secretary of Education, the workplace literacy movement has

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moved forward inexorably. The thrust of the report was aimed at reforming America's schools, especially high schools. But the report with its warning about the *rising tide of mediocrity* provided focus for a series of reports and legislation relating to workplace literacy. Examples of these reports include:

- *Workforce 2000: Work and Workers for the Twenty-First Century* (1987)
- *The Bottom Line: Basic Skills in the Workplace* (1988)
- *America's Choice: High Skills or Low Wages* (1990)
- *Worker Training: Competing in the New International Economy* (1990)

Examples of legislation affecting employers, employees, workplace literacy and other adult learners include:

- The Job Training Partnership Act (JTPA) of 1982
- The Immigrant Reform and Control Act (IRCA) of 1987
- The Even Start Act of 1988 for family literacy
- The Family Support Act of 1988 for welfare reform
- The Adult Education Amendments of 1988 including the delivery of adult education services

- The Omnibus and Competitiveness Act of 1988 resulting in the funding of 34 literacy projects throughout the United States

As government, education, and business responded to the literacy question, a number of issues and problems emerged. Among the issues are:

- A definition of literacy
- The numbers of illiterate adults (depending on definition)
- Decison of who is responsible to alleviate the problem of illiteracy
- The role of assessment and testing

Among the problems emerging are:

- Employers unrealistic time expectations for solving their literacy problem
- The instructional strategies to use
- The assessment strategies to use
- The evaluation methods to use
- The funding of workplace literacy program
- The compensational and promotional policies and procedures as they apply to workplace literacy

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- Legal implications of assessment and testing

This initial list of issues and problems provided the researcher with factors and categories for exploration and analysis. From this initial list, further factors and categories were identified and explored.

Methodology and Procedure for Data Collection

Methodology

This study employed the methods of grounded theory developed by Glaser and Strauss in *The Discovery of Grounded Theory* (1967).

Grounded theory methodology emphasizes the use of comparative analysis to develop theory. Darkenwald (1980, p. 102) suggests that the fundamental principle of grounded theory is research that "seeks explanation." Darkenwald (1980, p. 64) further describes grounded theory as "an inductive approach to research that focuses on social interaction and relies heavily on data from interviews and observations to build theory grounded in the data rather than to test theory or simply describe empirical phenomena." Bogdan and Biklen, in *Qualitative Research for Education* (1982, p. 29), describe qualitative research this way:

> . . . *Qualitative researchers tend to analyze their data inductively.* They do not search out data or evidence to prove or disprove hypotheses

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> they hold before entering the study; rather the abstractions are built as the particulars that they have gathered are grouped together. Theory developed this way emerges from the bottom up (rather than from the top down) from many disparate pieces of collected evidence that are interconnected. It is called *grounded theory*. (Glaser and Strauss, 1967)

Grounded theory methods employ a series of steps which determine the various activities at each step.

Procedures

The First Step of The Study

The researcher will review relevant literature and conduct personal interviews on workplace literacy for current practices, theories, and initial categories using the qualitative methods of fieldnotes, memoing, and open coding.

Discussion

The researcher collected data, drawing from a comprehensive list of literature based on his knowledge of workplace literacy programs and various bibliographic searches. Additionally, personal interviews were conducted and audiotaped with subsequent transcription. The selection of interviewees was determined by the purposive sampling according to the data needs as determined by the researcher's theoretical sensitivity. The

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three operations of collecting, coding, and analyzing were carried out simultaneously. This process is described by Glaser and Strauss (1967) "as the process of data collecting for generating theory whereby the analyst jointly collects , codes, and analyzes his data and decides what data to collect next and to find them, in order to develop his theory as it emerges" (p. 45) .

The researcher established the necessary levels of coding as categories, properties, and elements. Glaser and Strauss define categories and properties the following way: "A category stands by itself as a conceptual element of the theory. A property , in turn, is a conceptual aspect or element of a category " (1967). Analysis proceeded using a process described as "observer comments" and "memoing" (Glaser and Strauss, 1967). Observer comments (self-reflective comments scattered throughout the fieldnotes) were used to capture researcher reactions to particular events whereas memos were used for "think pieces" (Bogdan, Biklen, 1982, p. 87) to create in-depth analysis of a particular portion of the research.

The Second Step of the Study

The researcher will identify additional categories, the core category, problems, and issues relating to workplace literacy, continuing to use

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personal interviews, fieldnotes, memoing and the grounded theory analysis methods of open coding, axial coding, and selective coding simultaneously.

Discussion

Using the initial list of open coded categories, the researcher analyzed each of the categories, properties, and elements using memoing, personal interviews, and further document analysis to identify subcategories and elements of these subcategories or new categories to the point of saturation . Glaser and Strauss (1967, p. 62) describe saturation this way-- "a combination of the empirical limits of the data, the integration and density of the theory, and the analyst's theoretical sensitivity." At this point, the continued data collection yielded no new categories, subcategories, or elements. The identification of problems and issues allowed the researcher to continually cross-check the various theoretical constructs for reliability and suggest ideas for new categories, properties, or elements.

Triangulation as described by Fielding and Fielding in *Linking Data, Qualitative Research Method Series* (1986, p. 24) is a "multiple-strategy approach" using data (time, space, or person) to examine relationships "with-in-method" or "between-method" (p. 25).

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The Third Step of the Study

The researcher will collect and review data on each of the major categories related to workplace literacy using personal interviews and document analysis. The researcher will continue the use of fieldnotes, memoing, and coding using an iterative process.

Discussion

This step involved an in-depth examination of the major categories that contributed to the core category. The focus was on analysis of the properties and dimensions of each of the contributing major categories.

The Fourth Step of the Study

The researcher will identify the basic social processes and their relationships within the context of workplace literacy.

Discussion

The data analysis consisted of cross-referencing the various categories, properties, and elements for theoretical fit and possible hypotheses. Multiple triangulation strategies were employed to refine the data, confirm validity, and increase reliability. This triangulation strategy used existing workplace literacy models, expert opinion, and relationships between categories and within categories (Fielding and Fielding, 1986, p. 24) .

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The Fifth Step of the Study

The researcher will construct an integrated workplace literacy model using data derived from the identification of each of the generalized social processes. Further coding procedures continue and the use of triangulation begins to validate the evolving theoretical story line.

Discussion

In order to realize this objective, the researcher drafted a workplace literacy model based on the contributing substantive theories. This model is composed of: (a) major theoretical concepts (categories), (b) subcomponents of those concepts (properties), and (c) contributing process and content (elements) to each of the related subcomponents.

The Sixth Step of the Study

As the final step of the development of the workplace literacy model, selected experts in workplace literacy programs review the model and offer suggestions for improvement.

Discussion

Drafts of the model were sent to workplace literacy experts for review. Based upon ongoing feedback from these reviews, suggestions improving the model were incorporated and the final workplace literacy model was presented in this study.

Delimitations of the Study

The study was delimited by the following constraints.

1. The study was limited to grounded theory methods of analysis.
2. The selection of interviewees and observational sites was limited the geographical area of the midwest United States.
3. English as a second language (ESL) was not researched as a particular content area in this study as non-English speaking individuals require instructional strategies that are in addition to those discussed in workplace literacy strategies.
4. The study was to be completed in one year.

Definition of Terms

Adult Literacy -- the basic skills in language, reading, writing, and computation usually taught in an institutional setting and acquired formally and informally by individuals for their general functioning in society. Also identified by the term *generic literacy* .

Assessment -- the process of determining the knowledge and skills of an individual by written and performance tests in relation to some specified criteria.

Functional Literacy -- the basic skills in language, reading, writing, and computation usually taught in an institutional setting and acquired formally and informally by individuals for their general functioning in society. This is the same definition as adult literacy, but with the adjective *functional* added to literacy. The implication is that rather than a discrete set of basic skills, the frame of reference is the actual functioning of the individual in the context of everyday events in their life.

Job Analysis -- a process of determining and reporting significant worker activities, worker requirements, technical and environmental factors of a specific job through observation, interview and study. (U.S. Department of Labor, Bureau of Employment Security, 1965)

Task Analysis -- the process of breaking down a task into smaller units and then sequencing these units in an order of priority based on their importance in performing the job. (*Workplace Basics Training Manual*, Carnevale, Gainer, & Meltzer, 1990)

Literacy Task Analysis -- a task analysis that focuses on the basic literacy requirements of a job task.

Workplace Literacy -- the set of basic skills (oral, reading, writing, and computational) needed for a worker to perform in the context of his/her job.

Overview of the Study

A review of the literature pertaining to workplace literacy is presented in Chapter II. As the study developed, further literature review, depending on the identified factors, issues, and problems was used to substantiate contributing theories to the workplace literacy model. In Chapter III, the researcher presents the design of the study as it developed, using the previously stated objective and major steps of the study.

In Chapter IV, the workplace literacy model resulting from this study is presented using the method recommended by Strauss & Corbin (1990, p. 116), that of a conceptual *story line* and a descriptive narrative called the *story*.

Chapter V summarizes the findings, states the conclusions, describes recommendations for practitioners developing workplace literacy programs, and offers suggestions for further research.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The review of the literature in this study focuses on: (a) the methodology for the study; (b) seven current models of workplace literacy; and (c) major categories, properties, and elements of the study that were identified during the course of the study. Additions to this review were included as the theoretical demands called for more data to improve the grounded theory requirements of inductive and deductive theorizing and to satisfy the requirements of fit, understanding, generality, and control.

Literature Pertaining to the Methodology

Strauss and Corbin in *Basics of Qualitative Research: Grounded Theory Procedures and Techniques* (1990) use the following definitions to explain the tools of grounded theory:

> *Concepts*: Conceptual labels placed on discrete happenings, events, and other instances of phenomena.

Open coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Category: A classification of concepts. This classification is discovered when concepts are compared one against another and appear to pertain to a similar phenomenon. Thus the concepts are grouped together under a higher order, more abstract concept called category.

Coding: The process of analyzing data.

Properties: Attributes or characteristics pertaining to a category.

Dimensions: Location of properties along a continuum.

Dimensionalizing: The process of breaking a property down into its dimensions.

Axial coding: A set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by utilizing a coding paradigm involving conditions, context, action/interactional strategies and consequences.

Causal Conditions: Events, incidents, happenings that lead to the occurrence or development of a phenomenon.

Phenomenon: The central idea, event, happening, incident about which a set of actions or interactions is directed at managing, handling, or to which the set of actions is related.

Context: The specific set of properties that pertain to a phenomenon; that is, the locations of events or incidents pertaining to a phenomenon along a dimensional range. Context represents the particular set of conditions within which the action/interactional strategies are taken.

Intervening Conditions: The structural conditions bearing on action/interactional strategies that pertain to a phenomenon. They facilitate or constrain the strategies taken within a specific context.

Action/Interaction: Strategies devised to manage, handle, carry out, respond to a phenomenon under a specific set of perceived conditions.

Consequences: Outcomes or results of action and interaction.

Story: A descriptive narrative about the central phenomenon of the study.

Story Line: The conceptualization of the story. This is the core category.

Selective Coding: The process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in those categories that need further refinement and development.

Process: The linking of action/interactional sequences.

Contingency: An unanticipated/unplanned happening that brings about a change in conditions.

Transactional System: A system of analysis that examines action/interaction in relationship to their conditions and consequences.

Interaction: People doing things together or with respect to one another--and the accompanying action, talk, and thought processes.

Conditional Matrix: An analytical aid, a diagram, useful for considering the wide range of conditions and consequences related to the phenomenon under study. The matrix enables the analyst to both distinguish and link levels of conditions and consequences.

Conditional Path: The tracking of an event, incident, or happening from an action/interaction through the various conditional and consequential levels, and vice versa, in order to directly link them to a phenomenon.

Theoretical Sampling: Sampling on the basis of concepts that have proven theoretical relevance to the evolving theory.

Proven Theoretical Relevance: Indicates that concepts are deemed to be significant because they are repeatedly present or notably absent when comparing incident after incident, and are of sufficient importance to be given the status of categories.

Open Sampling: Associated with open coding. Openness rather than specificity guides the sampling choices. Open sampling can be done purposively or systematically, or occur fortuitously. It includes on-site sampling.

Relational and Variational Sampling: Associated with axial coding. Its aim is to maximize the finding of differences at the dimensional level. It can be done deliberately or systematically.

Discriminate Sampling: Associated with selective coding. Its aim is to maximize opportunities for verifying the story line and relationships between categories and filling in poorly developed categories.

Memos: Written records of analysis related to the formulation of theory.

Code Notes: Memos containing the actual products of the three types of coding, such as, conceptual labels, paradigm features, and indicators of process.

Theoretical Notes: Theoretically sensitizing and summarizing memos. These contain the products of inductive or deductive thinking about potentially relevant categories, their properties, dimensions, relationships, variations, processes, and conditional matrix.

Operational Notes: Memos containing directions to yourself and team members regarding sampling questions, possible comparisons, leads to follow up, and so forth.

Diagrams: Visual representations of relationships between concepts.

> *Logic Diagrams*: Visual representations of analytic thinking that show the evolution of the logical relationships between categories and their subcategories, in terms of the paradigm features. A kind of logical, visual sorting process that helps you to identify how the categories are related to one another.

Having given the above definitions from Strauss and Corbin (1990), the researcher will now explain the grounded theory process in a narrative format. The reader should keep in mind that all of these operations defined and described are ongoing processes that are operating simultaneously from the onset of the study to its conclusion.

Glaser & Strauss discuss the open coding process in this way:

> Two analytic procedures are basic to the coding process, though their nature changes with each type of coding. The first pertains to the "making of comparisons", the other to the "asking of questions." In fact, grounded theory is often referred to in the literature as the "constant comparative method of analysis" (Glaser & Strauss, 1967, pp. 101-116, Strauss & Corbin, 1990, p. 62). . . . During open coding the data are broken down into discrete parts, closely examined, compared for similarities and differences, and questions are asked about the phenomena as reflected in the data. Through this process, one's own and others' assumptions about phenomena are questioned or explored, leading to new discoveries. (Strauss & Corbin, 1990, p. 62)

Each of the open coded categories must be developed in terms of its properties and then the properties must be dimensionalized. Properties are the characteristics or attributes of a category, and dimensions represent locations of a property along a continuum (Strauss & Corbin, 1990).

Development of categories in terms of their properties and dimensions of those properties is important because it forms the basis for the development of relationships between categories and subcategories. The questions that assist in the development of categories and their properties and dimensions of those properties are who, what, when, where, how, how much, and why.

Axial coding of the data involves putting the data back together in new ways. Strauss & Corbin (1990, p. 97) describe axial coding this way:

> In axial coding our focus is on specifying a category (*phenomenon*) in terms of the conditions that give rise to it; the *context* (its specific set of properties) in which it is embedded; the action/interactional *strategies* by which it is handled, managed, carried out; and the consequences of those strategies.

The process of selective coding involves selection of the core category and then systematically relating it to other categories and filling in categories that need further refinement and development. To achieve integration of the grounded theory, a story line (the conceptualization of a descriptive story about the central phenomenon of the study) must be developed (Strauss & Corbin, 1990, p. 119). From this story line, a story about the core category must be developed using more descriptive detail.

In closing the discussion on grounded theory methods used in this study, the researcher will describe the four requisite properties if the theory

is going to be helpful to the substantive area to which it will be applied (Glaser & Strauss, 1965, pp. 260-272). The first property is that of *fitness*--the theory must be faithful to the everyday realities of the substantive area. This can be done by continually testing the emerging hypotheses under as many conditions as possible. Only in this way will the theory be closely related to "what is actually going on" (Glaser & Strauss, 1965, p. 261). The second property is *understanding*. By understanding , Glaser & Strauss mean that the substantive theory corresponds closely to the realities of an area and will "make sense" to people working in the substantive area. This is done by the use of concepts with two essential features. Glaser & Strauss describe these two features in this way:

> Our concepts have two essential features: they are both analytical and sensitizing. By *analytic* we mean that they are sufficiently generalized to designate the properties of concrete entities--not the entities themselves--and by *sensitizing* we mean that they yield a meaningful picture with apt illustrations. . . . (p. 263)

The third property is that of *generality*. Generality has to do with the level of abstraction of the concept used to guide the substantive theory. Glaser & Strauss (1965) describe the level is this way:

> In deciding upon the analytic level of our concepts, we have been guided by the criteria that they should not be so abstract as to lose their sensitizing aspect, but yet must be abstract enough to make our theory a general guide to the multi-conditional, ever-changing daily situations. . . . (p. 265)

The fourth requisite property is that of *control* . The person who uses the substantive theory must have enough control in the everyday situation to make its application worth trying. The essence of control is the production and control of change through *controllable* variables and *access* variables.

Workplace Literacy Program Models

In the first workplace literacy program model (WPLP 1), proposed by the American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration and entitled *Workplace Basics: The Skills Employers Want* (1988), eight major steps are enumerated as indicated below:

1. Identify and assess problems
2. Build support
3. Propose a plan
4. Perform a task analysis
5. Design a curriculum
6. Develop a curriculum
7. Implement the program
8. Evaluate the program

The second program model reviewed (WPLP 2) , *Literacy At Work* designed by Jorie Philippi (1991) , consists of seven major sections:

1. Getting started
2. Making plans
3. Gathering information
4. Designing instruction
5. Selecting and keeping participants
6. Evaluating functional context programs
7. Appendix (provides additional information)

The third model (WPLP 3) entitled *Worker Centered Learning: A Union Guide to Workplace Literacy* (Sarimento, Kay, 1990), has nine major steps:

1. Lay the groundwork
2. Identify your members' needs
3. Negotiate funding
4. Define your union's role
5. Develop links with the education community
6. Outline a plan of services
7. Design the worker-centered classroom

8. Encourage your members to participate

9. Keep your program on track

In the fourth workplace literacy program reviewed (WPLP 4), the UAW-GM national program model *Employe Excellence Development* (1991), four major sections direct the development and evaluation of the program:

1. Planning

2. Implementing

3. Monitoring

4. Evaluating

In the fifth workplace literacy program model (WPLP 5), *Closing the Literacy Gap in America* (Gordon, Ponticell, Morgan, 1991), six phases describe the major sections of this program:

1. Target productivity, quality, or production problems to workforce skills

2. Prepare workforce education program

3. Present workforce education task force report to senior management

4. Gain worker-union support

5. Prepare the workforce education curriculum

6. Initiate the workforce education program

7. Ongoing evaluation and implementation

The sixth workplace literacy program model (WPLP 6) was designed by the *Institute for the Study of Adult Literacy* (1989) and consists of six major steps:

1. Create awareness in the community

2. Develop organizational readiness in the organization

3. Situational analysis of business, industry, union

4. Negotiate workplace literacy intervention

5. Program planning

The seventh workplace literacy model (WPLP 7) reviewed, *The Bottom Line: Basic Skills in the Workplace,* has seven major steps to follow to a workplace literacy program:

1. Setting the goals

2. Assessing available resources

3. Recruiting the trainees

4. Working with partners

5. Building the curriculum

6. The role of general literacy

7. Evaluating the program

In the next section of the literature review, the researcher examined each of the major steps of the seven models (see Table 1) in order to describe and determine the substantive purpose of each step. This section of the review is presented by describing the first step of each model, then the second, and so forth until all major steps of each of the model have been examined. This will allow for comparison and contrast of each of the steps and allow for identification of the social processes suggested by each model. In addition, this deconstruction allows the researcher to identify additional categories, properties, and elements for further analysis, clarification, and hypothesis generation.

To aid the reader in the identification of major conceptual steps, the researcher underlined each conceptual step in this section of the literature review.

Step One

In WPLP 1 (ASTD, DOL, 1988) the first major step is: Identify and assess problems. Its essential elements are: Form a company-wide advisory

committee composed of representatives from training, human resource development, departmental representatives, and union representatives. A subcommittee for the purpose of task analysis is also formed at this time.

The first duty of this company-wide committee is to analyze selected jobs from job descriptions.

After these selected jobs have been analyzed, employee performance deficiencies should be documented in relation to the analysis of these jobs.

The first major step of WPLP 2 is: getting started. Five questions for management introduce this step:

1. Why have other companies decided to provide a workplace literacy program?
2. Do we need a program?
3. How can it solve our problems?
4. What will we have to do to develop a workplace literacy program?
5. What will it cost us?

Next, key players (personnel director, human resources director, company vice-president, training manager, consultant, union leadership) work together to define activities and timelines. This activity is governed by the need to recognize the problem. Integral to this first major step is building commitment and support. Examples of the rationale for a

workplace literacy program listed are: (a) fewer qualified job applicants, (b) performance mistakes in the workplace, (c) many employees lacking basic skills, (d) introduction of new equipment, (e) down-sizing, and (f) retraining problems.

The first major step of WPLP 3 is: lay the groundwork. This step consists of forming a planning group composed of union and management.

This step, as viewed by its advocates, is a political process and culminates in a letter of intent. The planning team's suggested responsibilities consist of: (a) articulating the program's goals and objectives, (b) explaining the program to each constituent group to gain their support, (c) developing the procedure for assessing workers' learning needs and goals, (d) determining appropriate responses to those needs, (e) planning specific educational and training services, (f) developing relationships with educational providers, and (g) establishing the program's administrative structure.

The first major step of WPLP 4 is: planning which consists of six substeps: (a) conduct an educational interest analysis, (b) select a local education agency, (c) design the workplace literacy learning center, (d) complete the plan, (e) request funds, and (f) submit the workplace literacy plan to joint union/management group for approval.

The first major step of WPLP 5 is: target productivity, quality, or production problems to workforce skills . The substeps listed are: (a) document employee deficiencies, (b) present the cost to the business, (c) present the future cost to the business, (d) how large is the problem, (e) what skill levels are needed for each job, and (f) how will support for the program be gained from union and employees.

The first major step of WPLP 6 is: create awareness in the community . The techniques suggested are: (a) engage community representatives in a community partnership, (b) recruit task force membership, (c) solicit program sponsorship, (d) present issues to the community, and (e) solicit expertise of the business community.

In WPLP 7, the first major step is: setting the goals. A series of questions are suggested to guide this step:

1. What company goals or performance standards are not now being met?
2. Are there projected changes in the business or business environment that will add new goals or modify current performance standards?
3. What are the skills needed to perform effectively in particular jobs or job families over the next five years?

4. Do employees or groups of employees lack these minimal skills?

5. If a basic skills program is set up, what results are expected?

6. What evidence would indicate that these results had been achieved?

Step Two

The second major step of WPLP 1 listed is: build cooperation with unions which is defined as the use of union representatives to explain the workplace literacy process to employees and work with management, provide funding, and selecting of course content. This step will serve to reduce the threat of the program to employees.

Major step two of WPLP 2 is: making plans and consists of seven essential planning activities. These activities are: (a) identify critical tasks, (b) conduct a literary task analysis (LTA), (c) plan and develop functional context curricula, (d) conduct needs analysis, (e) schedule recruitment and instruction, (f) deliver instruction, and (g) evaluate outcomes.

Major step two of WPLP 3 is: identify your members' needs and goals. This step consists of the following activities: (a) find out what your members want (perform a needs analysis), (b) analyze the skill demands of the workplace, (c) assess current training opportunities, and (d) appraise the need for support services (counseling, educational referrals, social services, child care, support in the workplace [mentors]).

Major step two of WPLP 4 is: implementing the workplace literacy program. The activities involved in this step are: (a) workplace literacy program approval and completion of agreement between company/union and LEA, (b) start-up--which consists of: identify programs and services, develop systems and records for tracking, select staff, orient staff, select and acquire literacy program materials, promote and recruit, and register applicants; (c) conduct individual needs assessments, (d) develop individual instructional plans, and (e) begin programs and services.

Major step two of WPLP 5 is: prepare workforce education program. The substeps are: (a) select appropriate training/education program for each workgroup, (b) determine what specific skills are needed, (c) at what grade level can these skills be addressed, (d) determine the approximate efficiency of each program, (e) prepare a task analysis, (f) determine evaluation system, and (g) prepare a budget.

Major step two of WPLP 6 is: develop readiness in the organization. This step is comprised of two activities: (a) communicate to further develop the organization's interest and understanding of workplace literacy, and (b) be prepared to talk to business in terms of the types and costs of appropriate workplace literacy programs.

Major step two of WPLP 7 is: assessing available resources and consists of: (a) support of the CEO, (b) size of the company, (c) extent of the basic skills problem, and (d) the characteristics and locations of the employees in need of training.

Step Three

Major step three of WPLP 1 is: propose a plan . The plan should contain the following elements: (a) conclusions, (b) strategic implications, (c) recommendation, (d) options, (e) recommended option.

Major step three of WPLP 2 is: gathering information and consists of the following substeps: (a) forming an advisory panel, (b) identifying critical tasks, (c) conducting advisory committee meetings, (d) analyzing literacy requirements for job tasks, (e) conducting a literacy task analysis (LTA), and (f) documenting the LTA.

Major step three of WPLP 3 is: negotiate funding. This step suggests that a workplace literacy program be part of a negotiated agreement between management and union for the following reasons: (a) continuity, (b) funds stability, (c) timelines, (d) problem-resolution process, (e) non-financial support, (f) demonstrated success in other examples.

Major step three of WPLP 4 is: monitoring workplace literacy program. This consists of quarterly monitoring activities by the local training committee and LEA.

Major step three of WPLP 5 is: present workforce education task force report to senior management. Three major areas of education effort are mentioned: (a) management, (b) support staff, (c) industrial shop.

Major step three of WPLP 6 is: situational analysis of business/union/industry . Three goals of step three are indicated: (a) to analyze perceived needs of the organization to determine if the problems have educational solutions and if the educational solutions have a literacy component, (b) to identify organizational supports and potential obstacles to the development of workplace literacy interventions, (c) to obtain the organization's commitment to allocate resources to literary services.

Major step three of WPLP 7 is: recruiting the trainees. Seven criteria are offered for guiding this step: (a) package and present the program as part of the regular training agenda (don't call it a literacy program), (b) include supervisors in the planning process so that they can assure workers that their jobs are not in jeopardy, (c) include workers in the planning process so they can add their perspective, (d) encourage "sales" presentations of the program to employees by people they trust such as other employees or the union, if

one exists, (e) make the goals of the program very clear and tie them, whenever possible, to incentives for participation such as learning how to use new technology, prospective job openings, or meeting personal goals; (f) locate programs at an attractive, comfortable, and permanent site that doesn't look like a school classroom for children; (g) hold classes at the worksite if possible, and (h) schedule training wholly or partially on company time.

Step Four

Major step four of WPLP 1 is: perform a task analysis on each selected job or job family. Components of this step are: (a) select the jobs to be analyzed, (b) develop/secure preliminary list of duties and tasks focusing on basic skills, (c) review, refine, and revise using expert committees, and (d) verify/validate using company employees with a task detailing focusing on basic workplace skills.

Major step four of WPLP 2 is: analyzing literacy requirements for job tasks. The following substeps are suggested: (a) schedule time for job-site visits with competent workers through supervisor or management, (b) request and review job description of workers to be interviewed, (c) request and review training manuals and job aids, and (d) familiarize

yourself with literacy skills applications embedded in critical tasks using a literary task analysis.

Major step four of WPLP 3 is: define your union's role. This step advocates union-run programs and calls for the governing structure of the program to be at least co-chaired by union and management.

Major step four of WPLP 4 is: evaluating. This step calls for evaluation on a quarterly and annual basis that includes input from participants, local joint training committee, and the LEA.

This is the final step of WPLP 4.

Major step four of WPLP 5 is: gain worker-union support. This step consists of: (a) formal negotiations between company and union (if necessary), and (b) informal presentations throughout the company to acquaint employees with the program.

Major step four of WPLP 6 is: negotiate the workplace literacy program intervention. The stated goal of this step is: to establish literacy needs of the organization and contract with the organization to provide literacy services to meet those specified needs. The following questions should be answered during negotiation and contracting:

1. What are the current and projected skills and knowledge requirements ?

2. Which employees have adequate literacy skills to meet those needs?

3. What is the role of the literacy provider in servicing skills and knowledge needs?

4. Who is responsible for what in the relationship (union, management, literacy provider)?

Major step four of WPLP 7 entitled working with partners and consists of: discussion about using the following providers: (a) local school district, (b) state education agency, (c) Private Industry Councils (PICs), (d) colleges and universities, (e) community colleges and other post-secondary institutions, and (f) community-based and other nonprofit literacy organizations such as Laubach Literacy Action and Literacy Volunteers of America, and (g) libraries.

Step Five

The fifth major step of WPLP 1 is to design a curriculum . The four substeps listed here were essentially criteria to guide the development of the curriculum. The exception was development of the implementation budget. Considerations were: (a) use performance-based materials, (b) use criterion-referenced testing, (c) take into account existing skills and knowledge, (d) use job-related materials and context as the basis of training

(e) plan evaluation during this stage, (f) implementation budget for management approval.

Major step five of WPLP 2 is: selecting and keeping participants. The following factors are listed as techniques to improve retention: (a) relevance of instruction, (b) full or partial pay, (c) bonuses, (d) recognition, (e) class during working hours, (f) flexible schedules, and (g) support services such as child care and transportation.

Major step five of WPLP 3 is: develop links with the education community. This step consists of three substeps which are: (a) explore local educational resources, (b) make your union's needs clear, and (c) select responsive instructors.

Major step five of WPLP 5 is: prepare the workforce education curriculum. This consists of: (a) determine programs at each location, and (b) determine staffing requirements.

Major step five of WPLP 6 is: program planning and consists of: establishing a partnership within the organization. This step is composed of three activities: (a) establish a partnership in the program within the organization, (b) include goal setting and objectives in the agenda, and (c) include planning instruction in the agenda.

This is the final step of WPLP 6.

Step Six

The sixth major step of WPLP 1 is: develop a curriculum . This consisted of three substeps and a listing of options for delivery systems. The three substeps were: (a) prepare the course outline, (b) develop individual lesson plans, and (c) develop instructional materials including evaluation and monitoring procedures.

The sixth major step of WPLP 2 is: evaluating functional context programs. A model for evaluation is presented which includes context, input, process, and product frames of reference for evaluation.

This is the final step for WPLP 2.

The sixth major step for WPLP 3 is: outline a plan for services. The substeps consist of: (a) determine the kinds of services to be offered, (b) determine the subject area of classes, (c) determine the related activities the program will address, (d) decide how many workers will be involved, (e) determine when and where the classes will be offered, (f) plan the level of involvement of workers, and (g) determine the outcomes of the program.

The sixth major step of WPLP 5 is: initiate the workforce education program and consists of four substeps: (a) conduct train-the-trainer programs for company training staff, (b) determine local program

management, (c) orient part-time and outside consultants to organization and program responsibilities.

The sixth major step of WPLP 7 is: discussing the role of general literacy instruction. This step discussed the reinforcing elements of general literacy instructions which are: (a) acquiring a high school equivalency (GED), (b) keeping up with current events, (c) reading and writing autobiographies, fiction, and poetry; (d) reading good literature, (e) understanding personal credit agreements, and (f) helping children with homework.

Step Seven

The seventh major step of WPLP 1 is: implement the program. The substeps outlined in this section are: (a) implement employee awareness program, (b) implement staff selection, and (c) implement train-the-trainer activities.

The seventh major step of WPLP 3 is: design the worker-centered classroom. Suggestions here are the use of learner input to determine the curriculum and use of a functional context approach in the classroom.

The seventh major step of WPLP 5 is: ongoing evaluation and implementation. Two questions govern the evaluation process.

1. How do supervisors rate participating employees job performance

before, and six months after the employees' enrollment in the program?

2. What local program modifications will be made based on instructors' and supervisors' evaluations?

This is the final step of WPLP 5.

The seventh major step of WPLP 7 is: evaluating the program. Three substeps are suggested for evaluation:

1. Construct and administer job-specific pre- and post- tests based on the results of a literacy audit or similar job task analysis examination technique. Tests should include simulations or actual job tasks. If possible, give periodic assessments of this type throughout the course of the program.

2. Talk to employees and their supervisors to find out what they believe to be the ongoing and final results of the training.

3. Look for signs of changes in the employees' self-confidence in class and on the job. Note positive changes in work habits such as improved attendance, punctuality, and teamwork.

4. Monitor classes to make sure that instruction is on track and the learning goals of the employees and the overall goals of the company.

This is the final step of WPLP 7.

Step Eight

The eighth major step of WPLP 1 is: evaluate and monitor the training program. The evaluation and monitoring should be based on *living processes* such as: (a) productivity improvements, (b) cost reductions, (c) quality improvements, and (d) reduced turnover of employees.

This is the final step of WPLP 1.

The eighth major step of WPLP 3 is: encourage your members to participate. Suggested steps for encouragement include: (a) ensure equal access to the program, (b) give workers a choice to participate, (c) know about the laws protecting employees regarding mandatory programs (Title VII of the Civil Rights Act of 1964), and (d) keep classroom records confidential, (e) publicize the program to your members, and (f) balance your members' competing needs.

Step Nine

The ninth major step of WPLP 3 is: keep your program on track.

Five factors are discussed for this step: (a) monitor what's going on, (b) help learners assess their progress, (c) be alert to concerns about testing, and (d) make assessment part of the learning process.

This is the final step of WPLP 3.

Literature Pertaining to Open Coded Categories

Needs Analysis

In *Making the Training Process Work* (Michalak & Yager, 1979) four major reasons are described why a needs analysis must be done before a training program is developed:

1. Identify specific problem areas in the organization.
2. Obtain management commitment.
3. Develop "before" data for effective evaluation.
4. Determine the value/cost ratio of training.

In *Training Needs Analysis: An Applications Guide* (UAW-GM Human Resource Center, 1987) training needs analysis is described as a five-step process:

1. Define purpose
2. Plan and develop activities
3. Gather data
4. Analyze data
5. Interpret and report findings

The first step *define purpose* indicates three reasons for conducting a needs analysis: (a) problem-solving, (b) new processes or equipment, and

(c) training and education for the future including basic educational enhancement. The data-gathering methods used for (c) above are listed as

1. Committee discussions
2. Plant data analysis
3. Structured interviews
4. Business plan analysis

The procedure above culminates in a defined training plan that is based on a process which identifies job competencies; assesses the target population on the basis of those competencies; and determines the need by the difference.

In ASTD's *Workplace Basics Training Manual* (1990), the needs analysis process is described:

> Needs analysis is a systematic process for determining and ordering goals, measuring needs, and deciding on priorities for action. (P.1.3)

The *Workplace Basics Training Manual* (1990) suggests the formation of an advisory committee with the following membership:

1. Training department representative
2. Human resources department representative
3. Manager or assistant from affected department
4. Front-line supervisor

5. Union steward or representative

6. One or two respected experienced workers

7. One or two skilled, exemplary workers

8. One or two enthusiastic newer workers

Job Analysis

According to the *Training and Reference Manual for Job Analysis* (1965, p. 6) job analysis is defined as:

> A process of determining and reporting significant worker activities, worker requirements, technical and environmental factors of a job through observation, interview, and study.

Braden and Paul report "Most writers and researchers seem to use the terms job analysis and task analysis interchangeably" (*Occupational Analysis of Educational Planning*, 1975). But Melching and Borcher point out that:

> While job analysis experts employ concepts such as task, function, responsibility, duty, etc. as though the distinctions among them were both obvious and fixed, this is simply not true. The curriculum designer should be warned that any attempt by him to place these terms into a reliable hierarchy may turn out to be not very rewarding. (*Procedures for Construction and Using Task Inventories*, 1973, p. 3)

Task Analysis

In *Training Needs Analysis: An Applications Guide* (UAW-GM Human Resource Center, 1987) typical task analysis elements are described:

1. Statement of the task and/or subtasks that must be performed to do the job.

2. When and how often the task is to be performed.

3. The quality and quantity of performance required.

4. Conditions under which the task is performed.

5. Criticalness of the task and subtasks.

6. Type of learning required.

7. Equipment, tools, and materials to do the task.

8. Physical requirements of the task.

The list of steps to perform a task analysis is also included in the above cited reference:

1. Review existing information--manuals, training materials, other similar task analyses, and any other instructional materials available.

2. List all the tasks and subtasks that a worker must do to perform the job.

3. Put the tasks and subtasks in the order they must be performed.

4. Use a numbering system for classification of major tasks and subtasks in the order which they must occur.

5. Take this initial listing to a subject matter expert for a critique.

6. Revise/delete or add items that the subject matter expert has identified.

7. Do an on-site observation to observe an experienced person performing the job. Record any discrepancies between your list and what was actually performed.

8. Prepare the final task listing, consulting with the subject matter expert to resolve any observed discrepancies.

The Vocational-Technical Education Consortium of States (V-TECS) uses the following production cycle to create a task analysis of a particular job. (1981)

1. Identification of job titles for specific areas of the occupation for which the task list is to be developed.

2. Development of task and equipment lists within the domain of job titles.

3. Comprehensive interviewing of job incumbents validating the task and equipment lists.

4. Selection of representative sample of incumbent workers form the population.

5. Administration of the occupational inventory task statement booklets to the incumbent sample.

6. Computerized analysis of the information collected from the sample.

7. Identification and training of a writing team.

8. Conversion of the task statements into a catalog of performance objectives and performance guides.

9. Analysis of information from a field review.

10. Development of the final catalog.

11. Dissemination of the program.

Another approach to task analysis is the *DACUM* (Developing A Curriculum). This task analysis process uses a committee of ten to twelve resource persons who are expert workers in a particular occupation. The committee functions as a group to perform the following series of steps as outlined in Curriculum Development in *Vocational and Technical Education: Planning, Content, and Implementation*, Finch & Crunkilton, 1984, pp. 145-150).

1. Reviewing a written description of the specific occupation.

2. Identifying general areas of competence within the occupation.

3. Identifying specific skills or behaviors for each general area of competence.

4. Structuring the skills into a meaningful learning sequence.

5. Establishing levels of competence for each skill as related to realistic work situations.

Literacy Task Analysis

Mikulecky (1985) and Carnevale, Gainer, & Meltzer (1990) describe the literary task analysis in three phases: before, during, and after.

Before:

- Choosing an occupation
- Identifying frequent and/or highly critical tasks involving basic skills, using Greenan's (1984) *The Development of Strategies and Procedures for Assessing the Generalizable Skills of Students in Secondary Vocational Programs* skills, which identifies approximately 115 skills generalized to more than seventy jobs.

During:

- Interviewing an experienced worker about the reading, writing, and computation done on the job;
- Interviewing the worker's supervisor about tasks on the job;

- Observing the worker performing reading, writing, and computational tasks on the job; and
- Gathering samples of reading, writing, and computational materials.

After:

- Further analyzing the job tasks using information obtained from observations, interviews, and materials;
- Identifying technical vocabulary; and
- Creating exercises that simulate the job task.

Philippi (1991) offers these steps to prepare for conducting a literacy task analysis:

> 1. Schedule times for job-site visits with competent workers through supervisors or managers.
>
> 2. Request and review job descriptions and requirements for the positions of the workers you will interview and observe.
>
> 3. Request and review available training materials, manuals, and job aids used by workers you will interview and observe.
>
> 4. Familiarize yourself with some of the literacy skill applications you are likely to find embedded in the performance of critical tasks.

Assessment

The assessment of workers for either basic literacy skills or those skills classified as job-related is rife with controversy, especially in the union workplace. There are many issues surrounding the assessment of workers and the uses of various assessment tests, methods, and procedures.

There are many Federal (Title VII of the Civil Rights Act of 1964) and State laws governing the use of assessment and testing for job applicants.

One of the issues in assessment is the use of *The Test of Adult Basic Education* (TABE). Dick (1989, cited in Sticht, 1990) writes:

> . . . [TABE] is not only an inappropriate instrument for individualized assessment, but that it does not measure what students know and have learned and that it does not inform the teaching and learning process. (p. 1)

In adult education, Sticht (1990) states that:

> The Adult Education Act, as amended in 1988, requires State adult education agencies to "gather and analyze data (including standardized test data) to determine the extent to which adult programs are achieving the goals set forth in the State plan." . . . (p. 2)

The U.S. Department of Education offers this definition of a standardized test:

> Definition. A test is standardized if it is based on a systematic sampling of behavior, has data on reliability and validity, is administered and scored according to specific instructions, and

> is widely used. A standardized test may be norm-referenced or criterion-based. The tests may, but need not, relate to readability levels, grade level equivalencies, or competency-based measurements. (cited in Sticht, 1990, p. 3)

The following definitions are offered by Sticht (1990) for types of standardized tests.

Norm-Referenced Tests

All human cognition is socially derived. That is, the language one uses, the concepts used for thinking and communicating, the logic of reasoning, the types of symbols and symbolic tools and bodies of knowledge stored in people's brains or in books are developed by individuals being reared in social groups. Because of the social basis of cognition, many standardized tests have been developed to permit a learner's score to be interpreted in relation to, or, stated otherwise, in reference to the scores of other people who have taken the test. In this case, then, an individual's standardized test score is interpreted by comparing it to how well the reference group *normally* performs on the test.

Criterion-Referenced Tests

In criterion-referenced testing, an absolute standard or criterion of performance is set, and everyone's score is established in relation to that standard.

Competency-Based Tests

Competency-based tests are basically the same as criterion-referenced testing. The term is used in competency-based education and training programs which call for the demonstration of achievement of competence rather than time-based factors.

The Comprehensive Adult Student Assessment System (CASAS) contains hundreds of basic skills competencies judged to be important to be mastered by adult basic education learners and the CASAS tests are referred to as competency-based tests.

Sometimes both criterion-referenced and norm-referenced tests are used in competency-based education and training programs.

Norm-referenced tests such as ABLE and TABE now provide competency-based information for interpreting individual items.

Curriculum-Based Assessment

In curriculum based assessment decisions are first made about what is important to be taught. Then a curriculum is developed, which may or may not be a formally, developed series of learning experiences. Finally, tests are constructed to *test to the learning*. Here the intent is to determine whether what is being taught is being learned and, if not, how instruction can be modified.

A major U.S. automobile manufacturer reported the use of the following standardized tests in literacy programs in an internal document:

GED Practice Test

Test of Adult Basic Education (TABE)

General Education Development Test (GED)

Adult Basic Learning Exam (ABLE)

Botel Reading Inventory

English As A Second Language (ESLOA)

Literacy Assessment Survey (LAS)

Slosson Oral Reading Test (SORT)

Nelson-Denny Reading Test

San Diego Quick Assessment Test

California Achievement Test (CAT)

Wide Range Achievement Test (WRAT)

Adult Placement Indicator (API)

Basic English Skills Test (BEST)

Industrial Reading Test (IRT)

Test of Applied Skills (ETS)

Comprehensive Adult Student Assessment System (CASAS)

Differential Aptitude Test (DAT)

The TABE was the most widely used to report gains to States. Sticht (1990) states:

> The nationally standardized and normed tests are not sensitive enough to the specifics of what is being taught in the program. Among other reasons, this is why many programs are searching for more curriculum-based assessment so that learners' "true" gains can be detected. (p. 11)

The major problem with nationally standardized tests is the incongruence between what training programs teach, what learners learn, and what the nationally standardized tests assess.

An alternative to nationally standardized testing is the development of a competency-based test that is geared directly to the learning objectives of the particular training program. Other alternatives include the use of learner-centered curricula, portfolio development and evaluation, and direct performance assessment where the learner must perform to indicate that the competencies have been learned.

Another issue in testing is the evaluation of programs for public accountability. Without standardized norms, it is difficult for outside evaluators to know how well one group of learners is doing when compared to another.

Design and Development of Curriculum

Mager (1988) lists the following six step instructional strategy in his book *Making Instruction Work*:

1. Determine that there is a need for instruction;
2. Describe what the instruction should accomplish, deriving these objectives from the world in which the students will be expected to function;
3. Determine which of these objectives students have already accomplished;
4. Develop, try out, and revise instruction that will fill the gap between what students can already do and what they need to be able to do;
5. Implement the instruction;
6. Find out how well it worked; and
7. Improve it.

Mager (1988) suggests that the following topics have to be considered in the instructional development of training materials:

1. Goal analysis
2. Target population description
3. Course objectives

4. Skill hierarchies

5. Course prerequisites

6. Criterion tests

7. Relevant practice

8. Content derivation

9. Delivery system selection

10. Module development

11. Sequencing

12. Tryout

13. Course procedures

Finch & Crunkilton (1984) explain the difference between *curriculum development* and *instructional development* in this way:

> Curriculum development focuses primarily on content and areas related to it. It represents a higher level of generalization than instructional development and always precedes it (Kindred et., 1976). Instructional development on the other hand, consists of planning one in direct support of student learning. Taken into account are the principles of human learning and the conditions under which it occurs. (Kindred et al., 1976) Naturally, when curriculum development is taking place, the instruction that is to be built upon this framework must be kept in mind. Likewise, principles of learning are not avoided when a curriculum is being developed; they are merely considered from a higher level of generalization.

The U.S Army and U.S Navy (1979, cited in Finch & Crunkilton, 1984) use a five phase instructional system development model.

Its phases are:

Phase One: Analyze

1.1. Analyze job

1.2. Select tasks/functions

1.3. Construct job performance measures

1.4. Analyze existing courses

1.5. Select instructional setting

Phase Two: Design

2.1. Develop objectives

2.2. Develop tests

2.3. Describe entry behavior

2.4. Determine sequence and structure

Phase Three: Develop

3.1. Specify learning events/activities

3.2. Specify instruction management plan & delivery system

3.3. Review/select existing materials

3.4. Develop instruction

3.5. Validate instruction

Phase Four: Implement

4.1. Implement instructional management plan

4.2. Conduct instruction

Phase Five: Control

5.1. Conduct internal evaluation

5.2. Conduct external evaluation

5.3. Revise system

There are a number of constraints related to the curriculum development process. Finch & Crunkilton (1984) identify the following considerations that must be examined during the curriculum development.

1. Student characteristics

2. Instructors & support staff

3. Curricular arrangement-- time, licensure of graduates, funding, equipment and facilities available.

4. The employment setting

5. Institutional goals

Sticht (1987) and Philippi (1991) strongly support the use of functional context education and training.

Sticht (1987) explains the functional context approach this way:

> The essence of this approach is contained in two major goals of instruction. First, always try to make the instruction as meaningful to the learner as possible in terms of the learner's prior knowledge. This facilitates the learning of new information by making it possible for the learner to relate it to knowledge already possessed, or to make it possible for the learner to transform old knowledge into new knowledge. Second, as much as

> possible, use the materials and equipment that the learner will use after training or education as part of the instructional program. This will motivate the learner by showing that what is learned is relevant to a future goal, and it will promote transfer of learning from the classroom to the next training or "real world" activity. In short, the functional context method of instructional design attempts to motivate and promote learning and transfer by making the program meaningful in terms of the learner's past, present, and future. (p. 4.3)

Philippi (1991) states that:

> Workplace literacy programs that work meet the need for employee training in thinking strategies and basic skill applications used to perform job tasks. They are different from traditional adult basic education because they teach skills in the context in which they will be used. They are also different from vocational education or technical training because they teach the applications of basic skills used to perform job tasks and not the content of the tasks themselves. The most effective programs are those that link instruction with specific job materials and situations; that is, they teach skill applications as they are used on the job. This theory of instruction is referred to as the *functional context* approach.

Delivery of Workplace Literacy Programs

Carnevale, Gainer, Meltzer (1990, p. 7.1) list the following learning objectives for readers (those interested in the delivery of workplace literacy programs) in "Step Seven" of *Workplace Basics Training Manual* concerning implementation of workplace literacy programs:

> The reader will be able to:
>
> 1. Discuss the role of the program manager, her or his major duties and responsibilities, the skills and abilities required, and the education and experience required.

2. Discuss the role of the program administrator, her or his major duties and responsibilities, the skills and abilities required, and the education and experience required.

3. Discuss the role of the instructional staff, their major duties and responsibilities required, and the education and experience required.

4. Conduct a train-the-trainer workshop.

5. Discuss the advantages and disadvantages of peer training and the buddy system.

6. Discuss the role of counseling and possible resources.

7. Develop a learning contract.

8. Decide whether to pilot test the training program.

9. Conduct a pilot test of the training program.

In the selection of instructional staff, the following suggested questions are offered by Carnevale, et al., (1990, p.7.8):

- Is the person familiar with adult learning and the psychology of learning?
- Has the person a history of actually working with adults, and what kind of evaluation feedback is available on performance?
- What is the level of subject expertise?
- Will the person be comfortable using new subject curricula and instructional approaches that are not school based?
- Does the person have experience teaching basic workplace skills in a job-related context?

- Will the person be responsive to company requirements and working with company personnel?

In regard to train-the-trainer workshops, (Carnevale et al., 1990, p. 7.10) the following information is suggested for trainers:

- Review of applied learning perspectives,
- Review of curricula with hands-on practice,
- Familiarization with course objectives,
- Familiarization with course procedures and accountability requirements,
- Case studies in counseling and human relations,
- Familiarization with record-keeping and documentation requirements, and
- One week observing or working on actual jobs for which the training is being provided.

Evaluation

In the *Evaluator's Handbook* (Herman, Morris, & Fitz-Gibbon, 1987, pp.12-14) , the following quote explains some aspects of the complexity and non-linearity of the evaluation process:

> While recognizing that the development of policy and programs (and evaluation's role in that development) is neither simple nor linear, it nonetheless is useful to think about hypothetical phases during the life of a program when evaluation and the credible information it creates can make a contribution.

The four hypothetical phases described (Herman, et al., 1987) are:

- Program initiation: whereby an attempt is made to verify the stated needs of the program to assure specific needs have been identified in a systematic way.

- Program planning: whereby an attempt is made to qualify new programs by controlled pilot testing to assess the effectiveness and feasibility of alternative methods and establishing plans for conducting subsequent evaluations.

- Program implementation: whereby formative evaluation can take place during the implementation to iron out mistakes, solve problems, fine-tune the process, and reach the point where the program is running smoothly before judging its effectiveness.

- Program accountability: Whereby a summative evaluation is done to question the overall effectiveness and impact on the organization.

Stufflebeam (Brinkerhoff, Brethrower, Hluchyi, & Nowakowski, 1983) offers an evaluation scheme called CIPP (Context evaluation, Input evaluation, Process evaluation, Product evaluation) that has some similarities to the one explained above and is the suggested model by Philippi (1991) for workplace literacy program evaluation.

This model is usually expressed in a tabular or matrix format using the following definitions:

Context Evaluation

Objective: To define the institutional context, to identify the target population and assess their needs, to identify opportunities for addressing the

needs, to diagnose problems underlying the needs and to judge whether the proposed objectives are sufficiently responsive to the assessed needs.

Input Evaluation

Objective: To identify and assess system capabilities, alternative program strategies, procedural designs for implementing the strategies, budgets, schedules, and programs.

Process Evaluation

Objective: To identify or predict, in process, defects in the procedural design or its implementation, to provide information for the preprogrammed decisions, and to record and judge procedural events and activities.

Product Evaluation

Objective: To collect descriptions and judgments of outcomes and to relate them to objectives and to context, input, and process information and to interpret their worth and merit.

Philippi (1991) offers the following questions for using the CIPP system for evaluating workplace literacy programs:

Context:

- How have the goals of program instruction been defined? Is there a clear written statement to which all participants, instructors, and key program personnel subscribe?

- What are the beliefs about workplace literacy promoted by the program? Are those beliefs documented and accepted by those who are a part of the program? Are those beliefs supported by theory and research?
- Is there a clear written statement of the program's operational objectives that delineates how instruction is to occur during different phases of the workplace literacy program?
- Is the workplace literacy program as defined compatible with the needs and characteristics of the participants and of the company it serves?

Input:

- Are the workplace literacy program materials consistent with its philosophy and stated goals?
- Are adequate materials available for all phases of the workplace literacy program?
- Do the workplace literacy instructional materials work? Are they interesting, stimulating, easy-to-use, and cost effective?
- Do the workplace literacy materials and instructional techniques accommodate the literacy levels of program participants?

- Are instructors adequately trained to implement all phases of the workplace literacy program?
- Are effective support services readily available to participants who need them?
- Is the learning facility planned and equipped to support the workplace literacy program?
- Is the workplace literacy program record-keeping system complete, simple, and efficient?

Process:

- Has instruction been developed that is based on findings from the literacy task analysis of critical tasks?
- Do routine program activities reflect stated program goals? Are current records of these activities maintained in the workplace literacy program?
- What are each participant's current progress, instructional activities, and learning needs?
- Among instructors who have similar responsibilities or who serve the needs of similar participants, are workplace literacy program instructional decisions and activities generally consistent?

- Are participants in the workplace literacy program making the progress that was anticipated? How is their progress determined?
- How much instructional time is spent with workplace literacy program participants in whole-group, small-group, individual formats?
- Are the planned-for workplace literacy resources actually being used? Is there a need for additional resources not initially planned?

Product:

- Do program participants continue to use skill applications after they leave class? Do they apply their new learning to the performance of critical job tasks? Do they view the skills applications as being useful?
- Is each participant acquiring the skill applications for critical tasks that were identified in literacy task analyses? Is progress satisfactory? Has job performance of critical tasks improved?
- Can the company determine cost benefits derived form workplace literacy program instruction?

Knowles (1975, pp. 86-88) offers the following sources of evidence to use for evaluating learning programs.

Objective	Types of evidence
Knowledge	Reports of knowledge acquired, as in essays, examinations, oral presentations
Understanding	Examples of utilization of knowledge in solving problems, as in critical incident cases, simulation games, research projects
Skills	Performance exercises, with ratings by observers
Attitudes	Attitudinal rating scales; performance in role playing, critical incidents with feedback from observers
Values	Value rating scales; performance in value clarification groups with feedback from observers

Tyler (1949) presents this definition of evaluation:

> It should be clear that evaluation then becomes a process for finding out how far the learning experiences as developed and organized are actually producing the desired results and the process of evaluation will involve identifying the strengths and weaknesses of the plans. This helps to check the validity of the basic hypotheses upon which the instructional program has been organized and developed. (p.104)

Wentling (1980) offers these techniques for evaluation efforts:

- Learner assessment
- Follow-up survey of former learners
- Employer survey
- Use of a consultative team
- Evaluation of education and training personnel
- Cost/outcome analysis

Wentling (1980) suggests the following procedural steps for designing the evaluation system:

1. Establish a team for planning and coordinating the evaluation

2. Schedule and hold a meeting of the planning team

3. Develop and make formal a purpose and scope statement for the evaluation team

4. Develop evaluation questions for the system

5. Select appropriate evaluation activities

6. Sequence evaluation activities

7. Present the evaluation system in the form of an evaluation plan

Organizational Development

The implementation of a workplace literacy program usually is going to require an examination of the company's technical, political, and cultural

dynamics to determine what changes must take place, if any, to assure positive benefits result from training and education via the workplace literacy program.

Tichy (1983) suggests that in order to strategically manage change, the following change levers must be available for use.

1. *External Interface.* As the environment becomes more complex and turbulent, the task of identifying and predicting pressures becomes more difficult to understand. It is also more difficult to map environmental pressures. The development of new environmental scanning and information processing capabilities is often required.

2. *Mission.* In times of relative environmental stability and surplus resources, it is possible with nebulous, shifting goals and priorities. But as the economic, political, and social pressures mount, so does the need for clear statements of organizational mission to guide the organization in strategic decisions.

3. *Strategy.* The development of a strategic plan with operational objectives at multiple levels in organization is a vital requirement. Installing such a process requires a new set of management techniques and processes.

4. *Managing Organizational Mission/Strategy Processes.* As planning and decision making become more complex, it will be necessary to develop more sophisticated processers which realistically engage the relevant interest groups.

5. *Task.* A shift in strategy may entail the introduction of new tasks and technologies to the organization. This requirement may result in the introduction of new professionals into the organization or the training and development of existing staff.

6. *Prescribed Networks.* Adjustments are required in the networks of communication and authority to deal with new tasks and /or technologies.

The introduction of a new task requires management to plan and prescribe the necessary network of communication. This includes specifications of the communications, of who works with whom to accomplish which tasks, as well as who reports to whom.

7. *Organizational Process: Communication, Problem Solving, and Decision Making*. Post-industrial organizations have multiple authority-managerial/professional splits, and matrix splits. Therefore, lines of decision making become blurred. This makes it imperative that managers understand and utilize consensual decison-making approaches as well as conflict bargaining procedures.

8. *People*. Any organizational change entails altering individual behavior. Thus, an explicit focus on motivating people becomes part of the managed change process.

9. *Emergent Networks*. A major part of an organizational change process is to manage the informal communication and influence-networks which exist throughout the organization. Coalitions and cliques in these networks can facilitate or hinder the change effort and thus require explicit attention.

Hrebiniack & Joyce (1984) suggest that the following three criteria must be used to judge the value of an implementation strategy:

Logic. Managers confronting implementation problems face an almost bewildering array of possible activities. Decisions must be made concerning which of many strategies and organizational variables should be changed, in what order, and within what time frame. But all implementation activities are not equally salient under differing conditions, and differential costs, both human and financial, are incurred in their application. Faced with this complexity, and equipped with only limited information handling and decision-making capabilities, managers need a cognitively manageable implementation model or approach. Such a model must represent a *logical* delineation of major categories of implementation activities and the relationships among them, thereby reducing a previously intractable problem to one of limited proportions and allowing informed decision in the face of previously unmanageable complexity. . . . (pp. 2-3)

> ***Action.*** Strategy implementation takes place in the real world of management. It is concerned not only with questions of "why" but also of "how." Managers are rewarded for "doing" as well as "knowing," and this places the constraint of *usefulness* on any approach to implementing strategy. At the same time, these constraints make development of an implementation model more difficult. Many apparently important variables are relatively inaccessible to observation and, more important, to manipulation. For example, one of the most studied effectiveness measures in organizations has been worker satisfaction. Yet it is very difficult to see, feel, or hear another person's satisfaction or to know accurately that it has been affected by some measurable amount. . . . For an approach to implementing strategy to be useful to both academicians and managers, it must emphasize variables that, first of all, are *manipulable* and failing this, are at least relatively *objective*. (p. 3)

> ***Contingent Prescriptions.*** Some time ago, Simon noted that the principles of management were like proverbs; you could always find one to support what you wanted to do. (1958) Recent developments in the field of organization design and theory have supported the limited utility of principles proposing a "one best way" to manage, suggesting in their place a "contingency view" in which different organization designs or approaches are believed useful in different situations. This contingency position has come to dominate management theory and practice.

Hrebiniak & Joyce (1984) propose two critical principles to guide the implementation process--that of *intended rationality*; and *minimum intervention*. Specifically, the principle of intended rationality proposes that:

> *Individuals are limited in their ability to develop alternatives and their consequences, and to make unequivocal choices based upon such analyses and preferences. Typically, they employ logical and individually rational processes for decision within these constraints. Faced with complexity, individuals act to factor large problems into incrementally and cognitively manageable proportions. Given the realities of resource allocation decisions and organizational control systems, managers will seek to achieve utilitarian outcomes to the extent that these are valued and reinforced.*

The principle of minimum intervention is explained by Hrebiniack & Joyce in the following statement:

> *In implementing strategy managers should change only what is necessary and sufficient to produce an enduring solution to the strategic problem being addressed.*

Beckhard & Harris (1987, p.31) propose using the following model to guide the change process.

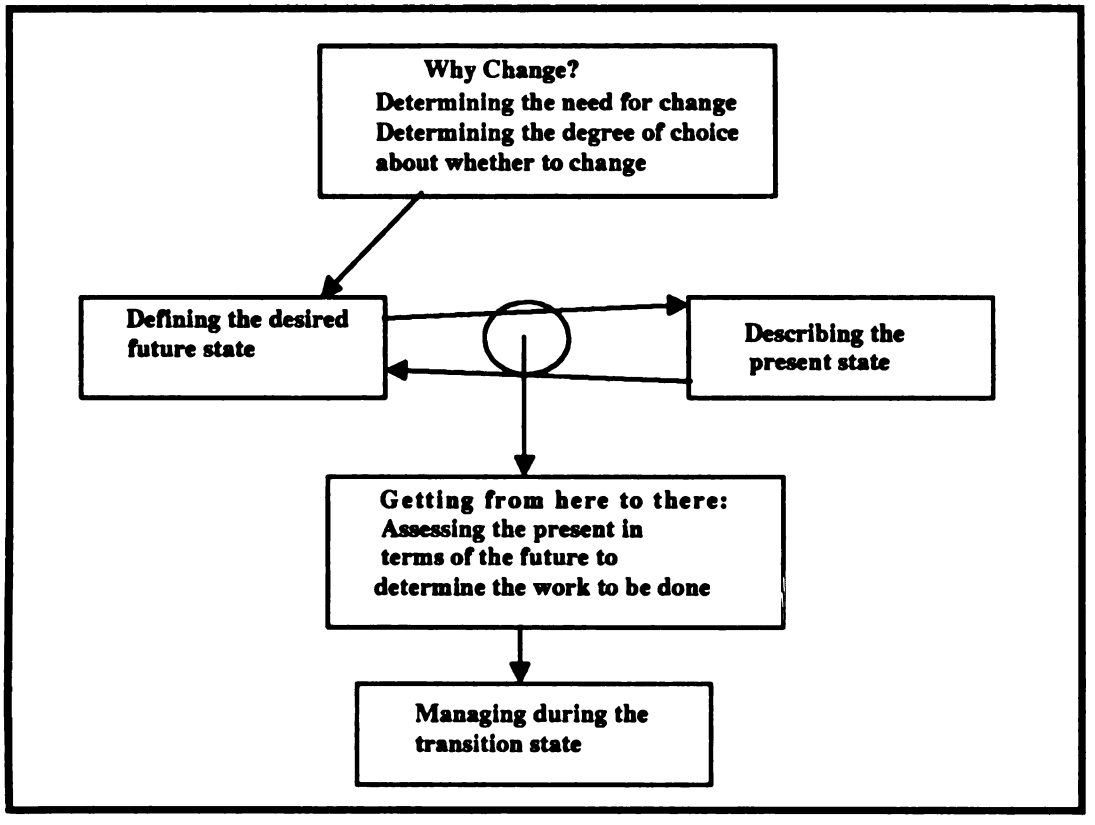

Figure 1. Change Process Guide

Hersey & Blanchard offer the following framework for planning and implementing change in an organization. The framework is constructed around two stages:

> 1. *Diagnosis.* The first, and in some ways the most important, stage of any change effort is diagnosis. Broadly defined, the skills of diagnosis involve techniques for asking the right questions, sensing the environment of the organization, establishing effective patterns of observation and data collection, and developing ways to process and interpret data. In diagnosing for change, managers should attempt to find out: (a) what is *actually* happening now in a particular situation, (b) what is *likely* to be happening in the future if no change effort is made, (c) what would people *ideally* like to be happening in this situation, and (d) what are the blocks, or constraints, stopping movement from the actual to the ideal.
>
> 2. *Implementation.* This stage of the change process is the translation of diagnostic data into change goals and plans, strategies and procedures. questions such as the following must be asked: How can change be effected in a work group or organization and how will it be received? What is adaptive and what is resistant to change within the environment?

Hersey & Blanchard point out the three steps in the diagnostic process:

- Point of View

> . . . Ideally, to get a full picture you should look at the situation from the points of view of as many of the people as possible who will be affected by any changes. Reality, however, sometimes restricts such a broad perspective. At any rate, you should be clear about your frame of reference from the start.

- Identification of Problem(s)

> Any change effort begins with the identification of problem(s). A problem in a situation exists when there is a discrepancy between what is actually happening (the *real*) and what you or someone who hired you (point of view) would like to be happening (the *ideal*). . . . (p.334)

- Analysis--An Outgrowth of Problem Identification

> Problem identification flows almost immediately into analysis. Once a discrepancy (problem) has been identified, the goal of analysis is to determine why the problem exists. The separation between problem identification and analysis is not always clear, however, because identifying areas of discrepancy is often a part of analysis. (p. 335)

Hersey & Blanchard (1988) suggest that the implementation process involves identifying alternative solutions and appropriate implementation strategies and offers three theoretical models to assist in designing the change strategy:

1. Force Field Analysis. This involves the graphical depiction of the driving and restraining forces involved in the change. Analysis of these forces will suggest strategies for designing the implementation effort.

2. Change Cycles--Levels of Change. This involves investigation into four levels of change: (a) knowledge changes, (b) attitudinal changes, (c) individual behavioral changes, and (d) group or organizational performance changes in an attempt to design the implementation effort.

3. Change Cycles--Participative Change Cycle, Directive Change Cycle. The participative change cycle involves introducing new knowledge to an individual or group and hoping that the individual or group will accept the new knowledge and will develop a positive attitude and commitment in the direction of the desired change. The directive change cycle involves the imposition of the change onto individuals or groups by external force. Which change cycle used depends on the particular environment.

Planning

In *Workplace Basics Training Manual* (Carnevale, et al., 1990), the following information is suggested for a training plan:

- Conclusions of the preliminary research. One or two-page summary of the most compelling data resulting from the analysis of job descriptions.
- Strategic implications. Risks versus positive impacts.
- Options for implementation. Three budget scenarios, each including a description of:
    a. Cost,
    b. Time frame,
    c. Program content,
    d. Program development responsibilities,
    e. Program design, and

f. Resource constraints.

- Recommendations for program development.

Philippi (1991) suggests the following seven steps in the workplace literacy program planning process:

1. Identify the critical job tasks.

2. Conduct a literacy task analysis.

3. Plan and develop functional context curricula.

4. Conduct a needs assessment.

5. Schedule recruitment and instruction.

6. Deliver instruction.

7. Evaluate outcomes.

In *Worker-Centered Learning: A Union Guide to Workplace Literacy* the following steps are suggested:

1. State the program goals.

2. Translate the goals into a program.

3. Decide what services will be provided.

4. List the outcomes of the program.

5. Draw up operational plans.

In *Organizational Transitions*, Beckhard & Harris (1987) offer five characteristics of an activity or change plan:

- *Relevance:* activities are clearly linked to the change goals and priorities
- *Specificity:* activities are clearly identified rather than broadly generalized
- *Integration:* the parts are closely connected
- *Chronology:* there is a logical sequence of events
- *Adaptability:* there are contingency plans for adjusting to unexpected forces

Beckhard & Harris (1987) additionally suggest that planning the commitment strategy is essential and offer the following steps:

1. Identify target individuals or groups whose commitment is needed.
2. Define the critical mass needed to ensure the effectiveness of change.
3. Develop a plan for getting the commitment of the critical mass.
4. Develop a monitoring system to assess the progress. (p. 93)

Computer Based Training (CBT)

In an article entitled *Coast Guard Designs Its Own CBT* (Kirkpatrick, 1991), trainers at ATTC (Aviation Technical Training Center) offer these guidelines for consideration for the question: Is CBT the answer?

Trainers at ATTC say CBT is the answer if:

- The trainee needs to apply rules or perform a procedure to accomplish a task.

- The task is interactive, and the trainee needs feedback to go through the steps.

- Animation will convey the concept more effectively than a static representation.

- Many repetitions are needed to accomplish the tasks automatically.

- The task involves processes that are not visible in the actual equipment.

- The task is so critical that it must be performed flawlessly every time.

Computer-based training enhances learning because:

- Training takes place in a controlled environment where the trainee can learn without distraction.

- Training is available when the trainee needs it and as long as the trainee needs it.

- Training to competency takes less time than in a classroom setting, largely because it is self-paced.

- Presentation is consistent. The computer is a patient, tireless, and consistent tutor.

- Simulation permits the trainee to perform the actual activities that will be required on the job.

Computer-based training is not the best choice for:

- Learning theoretical or textual information. It should not be used as an "electronic page turner."

- Learning tasks that are neither important nor frequent. A job aid is a better choice. (p.20)

In an internal workshop entitled *Computer Based Training*, which the researcher attended at the UAW-GM Human Resource Center in September of 1990, the following definitions were offered regarding computer based training:

1. Computer Assisted/Aided Instruction (CAI): the computer assists in the instructional process.

a. Tutorial: The computer does all of the teaching and presents content material to the learner usually followed by learning activities such as problems to be solved or questions to be answered.

b. Simulation: The computer is used to simulate or mock a real life situation.

c. Drill and Practice: The computer elicits responses from the learner based on content taught elsewhere.

d. Gaming: A computer game in which the learner must recall and apply previously learned material.

2. Computer Managed Instruction (CMI): The computer is used to provide administrative support for the training. Examples of this support would be student registration and scheduling; testing, grading, and teaching; and statistical analysis.

3. Computer Based Training: The use of the computer in virtually any capacity for training. Encompasses both CAI and CMI.

4. Authoring System: An application program used for authoring CBT. The author selects specific lesson features from a menu of options.

In an article entitled "Authoring Systems: genesis through revelations," Peter Crowell answers the question *What is Authoring*? in this way:

> *Authoring* is a term used in the interactive industry to refer to the person(s) who enters the information that allows the computer to present an interactive program to the end-user. This may be done with a conventional programming language, an authoring language, or an authoring system. Furthermore, the *author* is not the creator of the system, as would be in the case of a book, rather the *designer* or the *developer* of the interactive program. Authoring may be a creative activity in many ways, but it is not the creation of the overall interactive system. It is rather the manipulation of program software and available peripherals. (p. 19)

Computer based training for workplace literacy programs is discussed in *Workplace Basics Training Manual* (1990) in terms of advantages and disadvantages.

> During **computer-based training**, the learner interacts with a computer program that presents subject matter, allows for proactive exercises, gives

feedback, analyzes performance, and provides assistance as needed. Among the advantages, computer-based training:

- Allows for a varied presentation combining text, graphics, animation, and sound,
- Is highly interactive and individualized,
- Stimulates interest through the use of good visuals,
- Is responsive to learner control, and
- Provides instant feedback and assistance as needed.

Its disadvantages include the following:

- The equipment is costly,
- It is complex and expensive to produce, and
- It is somewhat complicated for learners to operate, although that too is valuable learning. (*Principles of Instructional Design*, 1983, pp. 7-22)

In a special winter, 1991 supplement, "Electronic Learning" provided information on considering integrated learning systems (ILS) in an article entitled "How To Buy An ILS." The following topical areas were covered in the article:

I. Needs Assessment:

1. Areas of Need
2. Identify Outcomes
3. Possible Solutions
4. Long-Term Planning

II. Courseware:

1. Teaching Approach

2. Curriculum

III. Management System

1. System Set-up

2. Lab/Network Management

3. Performance Assessment

4. Performance Reports

IV. Hardware/Networking

1. Open architecture

2. Distributed Networks

V. Training & Support

1. Quality of Training

2. Quality of Technical Support

VI. Company Profile

1. Personnel and Financial Background

2. Future Developments

Funding

Funding for workplace literacy programs can come from a variety of sources in addition to company budgets. Other sources include federal,

state, and local public training funds. In addition, companies can negotiate with unions to write contract language in national bargaining agreements such as General Motors, Ford, and Chrysler have in their national bargaining agreements. *In Worker-Centered Learning: A Union Guide to Workplace Literacy* (1990), the following quotation provides rationale for a negotiated agreement:

> A negotiated education or training agreement with your employer can provide the funding support your program needs. Supplemental governmental grants may prove useful as seed money to give the employer further incentive for investing in the program. Your negotiations will be framed in the context of your union's (and the employer's) broader agenda for coping with workplace change. (p. 55)

Appendix B in the above cited text provides for a listing of outside resources that might be utilized for a workplace literacy program. Among these are:

1. State and Local Government:
    - state literacy programs
    - adult basic education
    - vocational education programs
    - English literacy programs
    - Job Training Partnership Act
    - economic development agencies

2. Federal Government:

    - national workplace literacy grants
    - funds for special needs
    - adult education for the homeless
    - training for literacy volunteers

3. Grants From Private Organizations

Building Commitment

Much of the literature researched for this study mentioned the need to build support for the workplace literacy program as an important step.

Workplace Basic Training Manual (1990) suggests the following techniques to build employee acceptance and support:

- Make the program highly visible. Use internal newsletters, union and employee representatives, and other communication sources to let employees know that a new training program will be developed for implementation at a given start-up date.

- Include an address and telephone number where employees can obtain more detailed information.

- Brief union and employee representatives. Use union or other employee representatives who are knowledgeable about the program to allay any fears that this and related activities will have a negative impact on employment status.

- Emphasize positive aspects of the program:

    a. Characterize the program as an effort to improve company-wide technical readiness,

b. Characterize the program as an effort to offer employees a chance for improving their promotional possibilities, and

c. Characterize the program as an effort to maximize limited training dollars to improve both company and individual performance.

Human Resources

Philippi (1991) suggests the following human resources are needed for various phases of the workplace literacy program:

1. Getting Started: personnel director, human resource development vice-president, training manager, or consultant; upper level management and local union president, where applicable.

2. Making Plans: CEO, union officials, human resource development managers, union local training committee co-chair, instructional designers, special-hire instructors, department managers, line supervisors or team leaders, and competent workers.

3. Gathering Information: managers, personnel and training directors, union representatives, curriculum writers, developers of training materials, competent workers.

4. Designing Instruction: curriculum writers, developers of training materials.

5. Selecting and Keeping Participants: personnel and training directors, union representatives, curriculum writers.

6. Evaluating Functional Context Programs: program director, program participants, instructors, supervisors, management.

Worker-Centered Learning: A Union Guide to Workplace Literacy offers these criteria for choosing instructors:

- Are the instructors experienced in teaching basic skills to adults?

- Do they have experience with a nontraditional approach to adult education--using teaching materials and curricula that aren't school-based?

- Have they actually taught in a non-school setting, such as a union hall or a workplace? (It may be hard to find instructors who have that kind of experience.)

- Are they sensitive to workers' needs and concerns as learners, including an understanding of the skills workers use in their jobs and in their personal lives?

- Are they union members? How knowledgeable are they about unions?

- How well do they now the industry and the jobs in which your members work?

- Are they comfortable using a variety of teaching approaches to meet the different learning styles of different individuals?

- Are they aware of and sensitive to cultural differences that may exist among your members?

- Are they flexible and willing to cooperate with the union in shaping the curriculum?

- Will they approach learners as equals in a collaborative learning process?

Counseling

The use of counseling in workplace literacy programs was viewed as especially important by most of the literature reviewed by the researcher.

The primary reasons given for this were the special needs of adult learners such as time constraints, children at home, being out of the learning situation for an extended period of time, fear of perceived ignorance, and confidentiality issues of the workplace. *Workplace Basics Training Manual* (1990) offered this advice to those considering counseling services in their workplace literacy program:

> Providing a counselor to communicate the message that the company's commitment is to see the employees succeed at learning is a necessary reinforcement mechanism. In designing the counseling functions of the program it is necessary to answer three questions:
>
> - What support will the program and students require?
>
> - Who will be responsible for providing it?
>
> - What in-service training in counseling technique should be provided for all program personnel? The counseling function begins before instruction and continues during and after instruction is completed. (p. 7-13)

The UAW-GM workplace literacy program (1991) provides counseling services through the LEA and the Employe Development Counselor (EDC). The following quote provides insight into the counseling process:

> The Local Educational Agency staff works with each participant in developing an Individual Instructional Plan. The Individual Instructional Plan outlines goals and methods to attain those goals within the Skill Center. This Individual Instructional Plan is shared with the EDC who supports individual UAW represented GM employes whose goals go beyond the offering of the Skill Center. The EDC assists them in developing short and long term educational goals. These educational goals can be obtained within the Skills Center or not. It is very important to recognize that an individual instructional plan and educational goal setting are the results of close cooperation between the LEA, EDC, and UAW represented employe. The Skill Center participant should always have considerable input into setting goals and selecting the means to attain those goals. (p. 1-28)

Adult Learning Theory

Malcolm Knowles (1984) presents the following theoretical precepts regarding adult learners:

> 1. *Regarding the concept of the learner:* The learner is self-directing. In fact, the psychological definition of adult is "One who has arrived at a self-concept of being responsible for one's own life, of being self-directing."
>
> 2. *Regarding the role of the learner's experience:* The andragogical model assumes that adults enter into an educational activity with both a greater volume and a different quality of experience from youth.
>
> 3. *Regarding readiness to learn:* The andragogical model assumes that adults become ready to learn when they experience a need to know or do

something in order to perform more effectively in some aspect of their lives.

4. *Regarding orientation to learning:* Because adults are motivated to learn after they experience a need in their life situation, they enter an educational activity with a life-centered, task-centered, or problem-centered orientation to learning. For the most part, adults do not learn for the sake of learning; They learn in order to be able to perform a task, solve a problem, or live in a more satisfying way. The chief implication of this assumption is the importance of organizing learning experiences (the curriculum) around life situations rather than according to subject matter units.

5. *Regarding motivation to learn:* Although it is acknowledged that adults will respond to some external motivators--a better job, a salary increase, and the like--the andragogical model predicates that the more potent motivators are internal--self-esteem, recognition, better quality of life, greater self-confidence, self-actualization, and the like. (pp. 11-12)

Darkenwald & Merriam (1982) present the following four tenets to express the foundation of the andragogical approach to adult learners:

A centering of attention on the experiencing *person and* thus a focus on experience as the primary phenomenon in the study of man.

An emphasis on such distinctively human qualities as choice, creativity, valuation, and self-realization, as opposed to thinking about human beings in mechanistic and reductionistic terms.

An allegiance to meaningfulness in the selection of problems for study and research procedures, and an opposition to a primary emphasis on objectivity at the expense of significance.

An ultimate concern with and valuing of the dignity and worth of man and interest in the development of the potential inherent in every person. Central to this view is the person who discovers his own being and relates to other persons and to social groups. (p. 78)

Jacob Getzels as quoted in *Adult Education: The Open Door* by Axford (1969) summarized four conditions most often present in adult learning situations:

> 1. Most of the significant problems faced by the adult do not have correct answers in any ultimately verifiable sense. The important decisions are always made in the face of uncertainty. The laboratory animal is correct when he reaches the goal box; the child is correct when he gets 100% on a test. The adult can never know whether the time he gives voluntarily to studying library service might not be better used finger-painting; or whether attendance at Great Book sessions is worth the loss of viewing the Wednesday night TV fight.
>
> 2. There are stereotyped institutional solutions that are correct because they are traditional rather than rational. The adult, more than the child, is bound by these stereotyped solutions and, although the solutions are modifiable, they are modifiable only in the face of severe internal and external pressures.
>
> 3. Any solution the adult makes to a problem is bound to have significant effects upon other individuals. He must predict not only his own reactions but the reactions of others. This is true for the educational problems in the classroom as well as for the personal problems of adult life.
>
> 4. The solutions to problems inevitably involve more than the assessment of objective facts. Perceptions and decisions may appear incorrect in the light of reality, but they are made because of emotional factors. By the time the adult comes to a learning problem, he is usually in one way or another deeply committed to a particular point of view regarding the significant matters at issue.

Literacy Standards

What are the generic skills that employers want? Certainly they probably include perceptions of the basic skills associated with formal

schooling, such as reading, writing, and computation. In *Workplace Basics Training Manual* (1990), a list of basic skills is offered:

- Learning how to learn
- Reading, writing, computation
- Listening and oral communication
- Creative thinking and problem solving
- Self-esteem, motivation, goal setting, and employability/career development
- Interpersonal skills, negotiation, and teamwork
- Organizational effectiveness and leadership (pp. 3-5)

This list is greatly expanded and content guidelines are offered in "Resource E" section of *Workplace Basics Training Manual* (1990).

Worker-Centered Learning: A Union Guide to Workplace Literacy offers the following advice regarding curriculum content:

> Your workplace literacy curriculum may be built around practical problems that interest adult workers and provoke discussion, such as:
>
> - applying for a job,
> - getting to work,
> - finding child care,
> - solving difficulties in the workplace,
> - learning to use new equipment on the job,
> - understanding the benefits of union membership, and
> - following current events in the community. (p. 87)

Philippi (1991) offers the following major skills as representative (the researcher has omitted examples and subskills also contained in this list):

Applications of Reading Skills Found in the Workplace

- Vocabulary
- Literal Comprehension
- Locating Information Within a Text
- Comparing and Contrasting
- Recognizing Cause and Effect; Predicting Outcomes Using Charts, Diagrams, Schematics
- Inferential Comprehension

Applications of Writing Skills Found in the Workplace

- Production
- Information Transfer (in multiple steps or from one source)
- Information Translation
- Information Extension or Interpretation

Applications of Computation and Mathematical Problem-Solving Skills in the Workplace

- Performing Whole number Operations
- Using Fractions
- Using Decimals
- Using Percents
- Performing Mixed Operations
- Measurement and Calculation
- Estimation

Philippi (1991) also suggests considering the incorporation of listening skills, oral communication skills, and interpersonal skills used for teamwork, leadership and negotiation into the literacy task analysis.

In a report entitled *Basic Skills in the U.S. Work Force* , the Center For Public Resources offers the following list of skill competencies for consideration as "basic."

Reading Competencies

- The ability to identify and comprehend the main and subordinate ideas in a written work and to summarize the ideas in one's own words.

- The ability to recognize different purposes and methods of writing, to identify a writer's point of view and tone, and to interpret a writer's meaning inferentially as well as literally.

- The ability to vary one's reading speed and method according to the type of material and one's purpose for reading.

- The ability to use features of printed materials, such as table of contents, preface, introduction, titles and subtitles, index, glossary, appendix, bibliography.

- The ability to define unfamiliar words by decoding, using contextual clues, or by using a dictionary.

Writing Competencies

- The ability to organize, select, and relate ideas and to outline and develop them in coherent paragraphs.

- The ability to write Standard English sentences with correct:
  sentence structure
  verb forms
  punctuation, capitalization, possessives, plural forms,
  and other matters of mechanics.
  word choice and spelling

- The ability to improve one's writing by restructuring, correcting errors, and rewriting.

- The ability to gather information from primary and secondary sources; to

write a report using this research; to quote, paraphrase, and summarize accurately; and to cite sources properly.

Speaking and Listening Competencies

- The ability to engage critically and constructively in the exchange of ideas.

- The ability to answer and ask questions coherently and concisely, and to follow spoken instructions.

- The ability to identify and comprehend the main and subordinate ideas in discussions, and to report accurately what others have said.

- The ability to conceive and develop ideas about a topic for the purpose of speaking to a group; to choose and organize related ideas; to present them clearly in Standard English.

Mathematical Competencies

- The ability to perform the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.

- The ability to make and use measurements in both traditional and metric units.

- The ability to use effectively the mathematics of:
  integers, fractions, and decimals
  ratios, proportions, and percentages
  roots and powers
  algebra
  geometry

- The ability to make estimates and approximations, and to judge the reasonableness of a result.

- The ability to use elementary statistics.

Scientific Competencies

- The ability to understand the basic principles of mechanics, physics, and

chemistry.

- The ability to distinguish problems whose genesis is in basic mechanics, physics, or chemistry.

- The ability to apply basic scientific/technical solutions to the appropriate problems

Reasoning Competencies

- The ability to identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.

- The ability to recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.

- The ability to draw reasonable conclusions form information found in various sources, whether written, spoken, tabular, or graphic, and to defend one's own conclusions rationally.

- The ability to comprehend, develop, and use concepts and generalizations.

- The ability to distinguish between fact and opinion

LEA/Vendor

The literature about the use of a LEA (Local Educational Agency) or vendor is usually in the context of using the LEA or vendor to deliver workplace literacy programs jointly with the company, company/union, union, or deliver the total program itself under an agreement that specifies what services are to be delivered to the workforce and what outcomes may be expected.

The following examples of an LEA/vendor are listed in *Worker-Centered Learning: A Union Guide to Workplace Literacy* (1990).

- Public and private post-secondary institutions, including two-year and four-year colleges and universities
- vocational-technical institutions operated under the state education system
- the adult basic education program run by the public schools
- the GED (General Educational Development) program that provides high school equivalency diplomas in cooperation with the state education agency
- nontraditional providers of adult education and training, such as community-based organizations or job training agencies

Another source which provides information of the selection of an LEA is the UAW-GM workplace literacy program (1991):

- Capability of the LEA to provide comprehensive adult education programs
    - Adult Basic Education
    - General Educational Development
    - Educational Enrichment Services
    - High School Completion
    - English as a Second Language
    - Academic Advising Services
- Experience of the LEA in providing services to adults in industrial settings
- LEA's approach to adult education
- Capability of an LEA to qualify for state and federal funding and to provide quality adult education

Recruitment

The recruitment of workers into a workplace literacy program is an especially important activity. For various reasons, ranging from negative feelings about learning fostered by past failures in educational activities, time away from family, scheduling problems, to a perceived lack of relevance of the program to one's job or personal life, the adult learner is often reluctant to participate in such programs.

In *Worker-Centered Learning: A Union Guide to Workplace Literacy* (1990), the following suggestions are offered to encourage participation:

- Get the information about the program to all segments of your membership. Show them how the program can serve their needs. Specially targeted recruitment can help you attract a cross-section of your membership.

- Create a learning environment that reflects the needs, interests, and skill levels of workers from all segments of the workforce. Whenever feasible, offer instruction at beginning, intermediate, and advanced levels. This prevents "creaming" (helping only those with the best skills), yet recognizes the needs of workers at various skill levels.

- Develop a timetable for enrolling and use waiting lists as necessary, so everyone who wants to participate can be included into the program.

- Incorporate other union benefits into the program to support participation. For example, union sponsored social services may make it possible for some members to attend the program.

- Hold classes in locations that are convenient to everyone. Many unions establish a single learning center at the union hall or other nearby locations. If your membership is scattered, you may have to use several locations, such as schools, libraries, or churches that are near workers' jobs or homes. Access to public transportation is important and you need to tailor

classroom hours to workers' schedules.

- Help parents make child care arrangements. Some union-operated programs provide supervised child care at the learning center itself. Others help parents obtain services from nearby community organizations.

- Minimize the cost to participants. Don't pass operating costs through to the learners, and keep the cost of books and materials to a minimum.

- Train union members as mentors or peer counselors. They can take the fear out of enrolling, as well as solve attendance or motivational problems that may arise. (p. 94)

Philippi (1991) suggests that the use of functional context materials in the program and offering incentives for participation will assist in the recruitment and retention process:

> The goals of functional context instruction target joint survival of the employer and employees. Participants who achieve program goals and improve job performance often comment that they value these achievements as meeting personal goals as well as those of the company. Research demonstrates that participants who are attracted to programs and who complete instruction are those who perceive course content as relevant to their needs. In addition the relevance of instruction, other incentives used for recruiting and retaining workers frequently include full pay or partial pay for class time. bonuses and/or recognition for course completion. Holding classes during working hours or on flexible schedules. and providing support services, such as childcare and transportation. The most successful programs are those in which management and employees jointly commit themselves to the program to meet the emerging challenges of the workplace.

Other recruitment issues center around the selection of those who would benefit from the program as well as where they should be placed in relation to instruction. Philippi (1991, p.212) suggests that the use of the "CLOZE" test will assist in placing participants at instructional levels

appropriate for their ability level. If the mathematical calculations are involved in the job tasks, applied math problems can be used to match the participants to instructional levels.

Summary

The first section of the review of related literature was an explanation of and the methodology for using grounded theory to conduct this study. It was presented to show that grounded theory methods would result in a substantive theory model for workplace literacy programs that would be useful to practitioners in the field.

A review of seven workplace literacy models and each of their major steps was presented as well as a deconstruction of each of the steps into their substantive concepts. As the study progressed, concepts were added and categorized. Finally, open coding of these major categories resulted in nineteen categories (concepts) for further analysis. These categories represent conceptual content areas that were further researched in the literature to increase the theoretical density of each category.

In the next chapter, the relationships among these categories is analyzed and the substantive theory is developed.

CHAPTER III

DESIGN OF THE STUDY

Introduction

In order to develop an integrated workplace literacy model, this study employed the use of grounded theory methods (Glaser & Strauss, 1967) as described in the review of related literature. This study utilized three major sources of information to create the *Integrated Workplace Literacy Model*: First, document analysis, which involved the perusal of a substantial number of articles, books, and monographs from card catalogues at the UAW-GM Human Resource Center library, Michigan State University library, University of Michigan library, American Society for Training and Development catalogues, ERIC searches, examination of dissertations related to the topic, dissertation abstracts, and the researcher's personal library; second, interviews with adult educators, assessment consultants, curriculum experts, and workplace literacy consultants were used to increase the density of conceptual description and fill in the theoretical gaps in the

developing model; finally, the model, after preliminary completion, was reviewed by a number of workplace literacy experts for suggested revisions.

Table 1 on page 115, Comparative Structure of Workplace Literacy Programs, shows a breakdown of the of major steps of each of the seven programs reviewed by the researcher. Each of these steps was deconstructed for close analysis of the concepts (categories) involved (see REVIEW OF RELATED LITERATURE, pp. 28-47).

Figure 2 on page 116, Analysis of Data Procedure, shows the progression of analysis from interviews, observations, and document review to open coded categories to axial coded categories to select coded categories to the core category. Each level represents a higher level of abstraction and generalization.

Selection of the Samples

Document Samples

Selection of the seven workplace literacy models (see REVIEW OF RELATED LITERATURE) used for initial document analysis was made on the basis of the explanatory power of each, the diversity of concepts employed, and on the contextual setting for each model. Each of these

models was deconstructed to examine the substantive steps and allow the researcher to compare and contrast each model. From this examination, the initial conceptual categories were developed. Other document analysis samples were purposively selected for their theoretical relevance to the development of the concepts under study.

Selection of the Interviewees

The selection of those interviewed for this study was based on the theoretical demands of the evolving theory. For instance, assessment of employees' skill level is a very controversial topic. Questions of confidentiality, use of the proper assessment tool, who has access to the information, and how the information may be used are all very sensitive issues in the workplace. The researcher, even though quite experienced in these matters, sought additional information from an assessment consultant with a major automobile company and a private human resources firm in the Detroit area.

The area of computerized instructional systems is evolving so rapidly that the researcher sought up-to-date information on these systems from an instructional systems analyst who constantly evaluates these types of instructional systems.

The curricular design for workplace literacy systems required comparison and contrast with generic instructional systems design which necessitated an interview with a prominent curricular design firm in Auburn Hills, Michigan which develops workplace literacy training materials for Detroit area firms.

In order to confirm and enrich information about recruitment of participants and observe workplace literacy programs in action, several visits and interviews were conducted in workplaces in major metropolitan areas of Michigan. Several local educational agencies were visited and interviews conducted to ascertain the educational institution's role in workplace literacy programs.

Selection of the Expert Reviewers

The reviewers of the *Integrated Model* were selected on the basis of their long involvement in adult education, training, and familiarity with workplace literacy programs.

Methods of Collecting the Data

Initial data collection involved content analysis of workplace literacy models with the selection of seven models for more intensive examination.

Each of the various steps (conceptual categories) was entered on a computer card filing system and indexed. (open coding). Related subcategories were extracted and also analyzed for properties, and dimensions. Open coding resulted in the following initial conceptual categories:

1. Identify and assess problems
2. Planning
3. Create awareness in the community
4. Build support
5. Negotiate funding
6. Perform a task analysis
7. Perform a literacy task analysis
8. Define roles
9. Design curriculum
10. Develop curriculum
11. Select and keep participants
12. Implement program
13. Monitor program
14. Evaluate program
15. Job analysis
16. Lay the groundwork

17. Adult learning

18. Educational counseling

Data collection continued throughout the course of the study as dictated by investigation of categories and conceptualization of new categories using document analysis, interviews, and observation.

Methods of Analysis

The First Step of the Study

Initial Open Coding

The first step in the open coding process (analysis in tems of dimensional range) was the listing and preliminary analysis of the major categories for each of the seven workplace literacy programs (see Table 1, Comparative Structure of Workplace Literacy Programs, p. 115). This was done during the review of the literature. Next, numerous open coded categories were developed from further research, examination, and interviews. Finally, the researcher selected major categories and properties for further examination using document analysis and interviews.

The Second Step of the Study

Open Coding of Major Categories

The major categories were identified and research and investigation proceeded in nineteen major categories (see REVIEW OF RELATED LITERATURE). These categories are:

- Needs analysis
- Job Analysis
- Task Analysis
- Literacy task analysis
- Assessment
- Design and development of curriculum
- Delivery of workplace literacy programs
- Evaluation
- Organizational development
- Planning
- Computer-based training
- Funding
- Building commitment
- Human Resources
- Counseling

- Adult learning theory
- Literacy standards
- LEA/vendor
- Recruitment

Open coding for these major categories is presented on Tables 2- 20 on pp. 117-135. Open coding analyzes categorical properties in terms of their dimensional range. For example, Table 2 on page 117 represents the open coding of the major category "Needs Analysis." The various properties of this category are listed under the heading "Properties." Each of these properties was dimensionalized in terms of its range of variability. This range was indicated by individual phenomena or occurrences encountered during the course of this study. For instance, using the first property listed on Table 2--that of "Quality Problems" illustrates that when a needs analysis was conducted, quality problems in various organizations and contexts ranged from "Many problems" to "Few problems." The particular location within the dimensional range that each observation, occurrence, or phenomenon associated with the category "Needs Analysis" and the property "Quality Problems" represents a context or condition that requires specific action/interactional strategies designed to deal with that aspect of the problem. The open coding process of grounded theory methods allowed the

deconstruction, in this case, of the social process "Needs Analysis" and the determination of the location within the dimensional range of the entire set of properties for this category. Following this dimensionalizing process, action/interaction strategies were devised using the axial coding paradigm. This coding process was repeated for all categories, thus allowing the development of action/interactional strategies for each category which, when all strategies were combined, led to the researcher's overall strategy (grounded theory).

Table 1. Comparative Structure of Workplace Literacy Programs

Comparative Structure of Major Steps of Seven Workplace Literacy Programs

WPLP 1	WPLP 2	WPLP 3	WPLP 4	WPLP 5	WPLP 6	WPLP7
Identify & assess problems	Getting started	Lay the groundwork	Planning	Target productivity quality. problems to skills	Create awareness in the community	Setting the goals
Build support	Making plans	Identify your members' needs	Implementing	Prepare workforce ed. program	Develop organi-zational readiness	Assessing available resources
Propose a plan	Gathering information	Negotiate funding	Monitoring	Present program to senior mgt.	Situational analysis	Recruiting trainees
Perform a task analysis	Designing instruction	Define your union's role	Evaluation	Gain worker-union support	Negotiate intervention	Working with partners
Design a curriculum	Selecting & keeping participants	Develop links with the educational community		Prepare curriculum	Program planning	Building the curriculum
Develop a curriculum	Evaluating program	Outline a plan for services		Initiate program		Role of general literacy
Implement the program		Design the worker-centered classroom		Ongoing evaluation and implementation		Evaluating the program
Evaluate the program		Encourage members to participate				
		Keep your program on track				

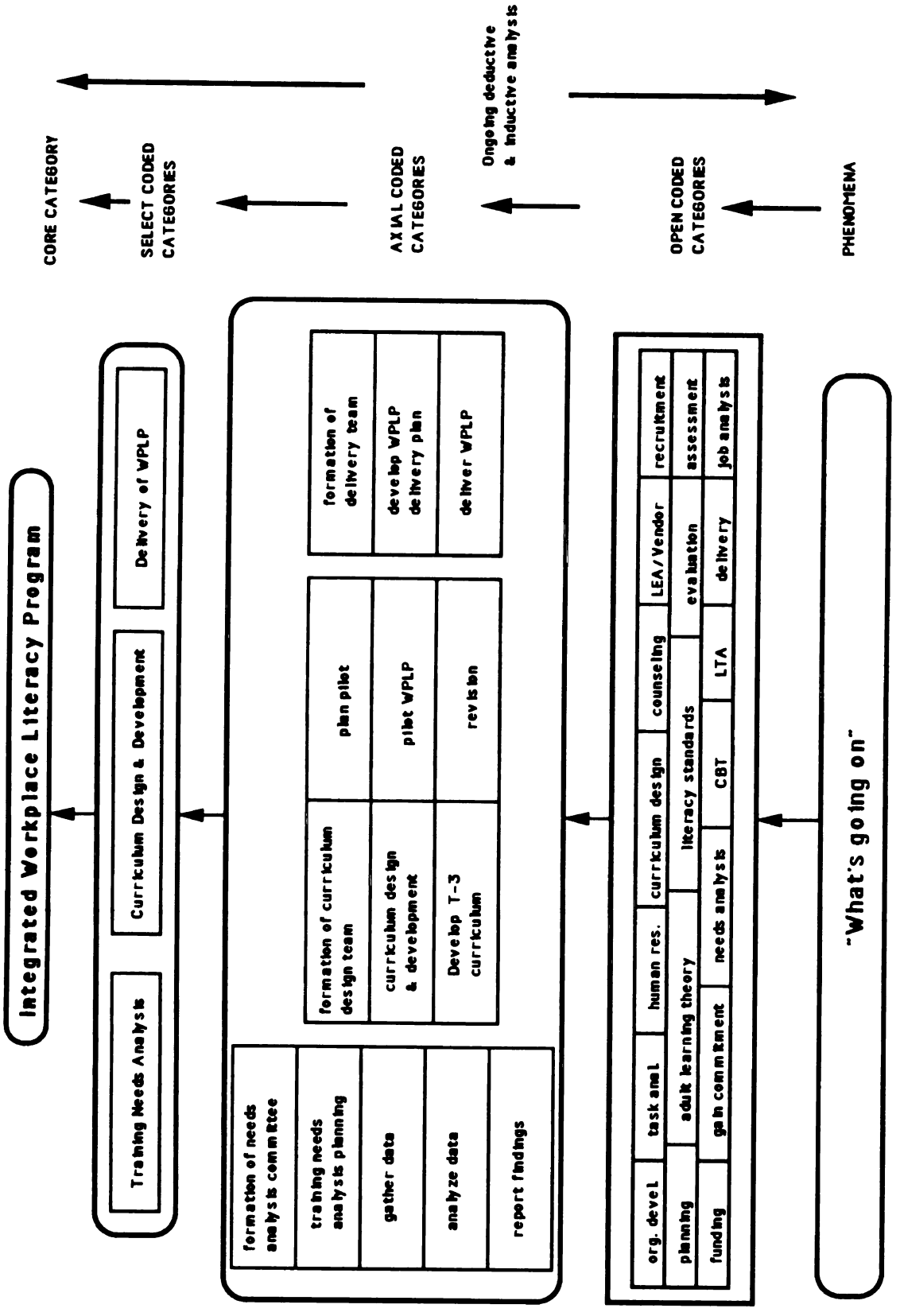

Figure 2. Analysis of Data Procedure

Table 2. Open Coding of Needs Analysis

Category	Properties	Dimensional	Range
Needs Analysis	Quality Problems	Many problems	Few problems
	Job analysis	All jobs	Selected Critical jobs
	Task Analysis	High detail	Low detail
	Literacy task analysis	Many or all categories of basic skills	Select few categories of basic skills
	Assessment of workers	All workers	Selected few or representative sample
	Human performance problems	Large	Low, few number of deficient worker skills
	Process design	Many process problems	Few process problems
	Incentive or motivational problems	Many	Few
	Designated purpose for needs analysis	Many	One
	Methods for conducting the needs analysis	Many	One

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 3. Open Coding of Job Analysis

Category	Properties	Dimensional	Range
Job Analysis	Scope	All jobs in the company	Selected jobs or groups
	Methods	Varied sources of input	Single source
	Descriptions	Comprehensive	Single focus
	Basis or purpose	Varied	Single such as literacy factors
	Focus	Function	People
	Detail	High	Low

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 4. Open Coding of Task Analysis

Category	Properties	Dimensional	Range
Task Analysis	Worker questionnaires	All of population	Sample of population
	Document analysis	Critical jobs	All jobs
	Literacy Task Analysis	All tasks	Selected tasks or not at all
	DACUM	One of many approaches	Sole approach
	Level of detail	High	Low
	Validation	All of population	Selected sample
	Political	Highly controversial	Accepted as rational process
	Observation	Highly detailed with checklists	Broad definition
	Time	Stated	Not stated
	Criticality of task	All	Few
	Interviews	Open	Structured
	Sequence	Not important	Highly important
	Standards reference	Internal	External
	Purpose	Many	One

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 5. Open Coding of Literacy Task Analysis

Category	Properties	Dimensional	Range
Literacy Task Analysis	Reading	Job skill focus	General reading ability
	Writing	Job skill focus	General writing ability
	Mathematics	Job skill focus	General mathematics ability
	Oral skills	Job skill focus	General focus
	Problem-solving skills	Major focus	Minor
	Cloze test	Used as one of many strategies	Exclusive
	Workplace materials	Total basis	Not used
	Assessment	Used	Not used
	Standards	Internal	External
	Assessment	One method	Variety of methods

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 6. Open Coding of Assessment

Category	Properties	Dimensional	Range
Assessment	Standardized tests	Sole measurement device	One component of many learning measurement device
	Performance test	Total assessment is on-job performance	Simulation or partial performance
	Political	Highly controversial	Accepted method of worker performance
	Use in program evaluation	Sole determinant of goal achievement	Not used
	Norm-referenced	National norm	Local site norm
	Competency-based	All competency-based	Portion of assessment procedure
	Use in needs analysis	High	Low
	Use in curriculum design	Included during design	Not used during curriculum design
	Program evaluation	High use	Low use
	Use in delivery	Used continuously	Little use
	Sensitivity	High	Low
	Confidentiality	High	Low

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 7. Open Coding of Design and Develop Curriculum

Category	Properties	Dimensional	Range
Design and Develop Curriculum	Planning	High level of detail	Broad general goal statements
	Job tasks	Based solely on job tasks	Based on broad education based goals
	Functional Context	All curricular materials from job	Little or none
	Evaluation	High	Low
	Based on identified training needs	All based on needs	Little or no reliance on identified needs
	Published/purchased curriculum	Totally purchased	None purchased, developed internally
	Adult learning theory	Incorporated	Little use
	Pilot	Used extensively	Not used
	Revision	Easy	Hard
	LEA/Vendor	Sole	One of many
	Computer-based	Sole	One of many
	ILS	Sole	One of many
	Assessment	One	Many ways/alter.

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 8. Open Coding of Delivery of Workplace Literacy Programs

Category	Properties	Dimensional	Range
Delivery of Workplace Literacy Programs	Planning	Centralized	Localized
	Computer-Based	Total	Partial, one of many strategies
	Workplace	Total on-site	Little or none on-site
	Evaluation	High integration	Low integration
	Instructional strategy	Competency-based	Time-based
	Assessment	Macro	Individualized
	Administration	National	Site-based
	Train-the-trainer	Highly structured	Trainer autonomy
	Functional context	High	Low
	Recruitment	Mandated	Voluntary
	Vendor	Total	Partial or none
	Facilities	National	Local
	Instructors	Internal	External

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 9. Open Coding of Evaluation

Category	Properties	Dimensional	Range
Evaluation	Focus	National	Individual
	Monitor	Ongoing	Rarely used
	Context	High focus on defining institutional context	Little focus on context
	Input	High emphasis on assessing system capabilities	Low emphasis
	Process	High emphasis on examination of process	Little emphasis on process, outcome focus
	Product	High	Low
	Cost/benefit	High	Low or not a major consideration
	Planning	Incorporated into overall program design	Added on to measure program outcomes
	Source	Internal	External

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Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 10. Open Coding of Organizational Development

Category	Properties	Dimensional	Range
Organizational Development	Change	High	Low
	Technical	Major factor	Minor factor
	Political	High adjustments	Little or none
	Cultural	Major consideration	Little or no cultural adjustment
	Mission statement	Major component	Not included as a major factor
	Intervention	Major	Minor
	Diagnosis	Highly detailed, objective level	Broad investigation
	Planning	Integrated into strategy	Little or no consideration

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 11. Open Coding of Planning

Category	Properties	Dimensional	Range
Planning	Alternatives	Wide development of options	One way
	Timing	Up front	As you go
	Stages	Once	Several phases
	Detail	Highly specified steps	Broad general goals
	Planning agent	National	Site-based
	Inputs	Many	Few
	Flexibility	High, adjustments made as needed	Low once developed-little opportunity for adjustment

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 12. Open Coding of Computer-Based Training

Category	Properties	Dimensional	Range
Computer-Based Training	Source	Vendor	Developed internally & specifically
	Instructional strategy	Computer-based	One of many
	Flexibility	High	Low, no customization possible
	Assessment capability	High	Low or none
	Instructional management	High level of management	Little or none
	Feedback	High	Low
	Adapt to individual learner	High	Low, same routine for all learners
	Job simulation	High	Low, not specific to job
	Hardware	Networked	Standalone
	Cost	Major factor	Not a major factor

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 13. Open Coding of Funding

Category	Properties	Dimensional	Range
Funding	Source	Many	One or few
	Scope	National	Local, site-based
	Funding strategy	Ongoing budget item	Project orientation
	Rationale	Highly detailed, cost/benefit analysis	Broadly stated rationale
	Contract language	Major source	Partial or none

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

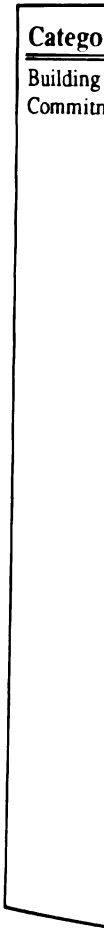

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Table 14. Open Coding of Building Commitment

Category	Properties	Dimensional	Range
Building Commitment	Visibility	High	Low
	Involvement	High, all levels of company personnel	Low, selective involvement
	Timing	Up front	Continuous effort
	Communication	One strategy	Many strategies

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 15. Open Coding of Human Resources

Category	Properties	Dimensional	Range
Human Resources	Scope	Comprehensive involvement of personnel from top to bottom of organization	Selected few human resources
	Source	Internal	External
	Unions	High involvement	Low or nonexistent
	Management	High involvement	Low or not involved directly
	Level of expertise	High	Low
	Worker involvement	High	Low
	Allocation	Function	Project

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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Table 16. Open Coding of Counseling

Category	Properties	Dimensional	Range
Counseling	Level	High, individualized	Low focus on individual
	Focus	On all aspects of the worker's problems	Low, Only related to specific program
	Location	On-site	Off-site
	Source	Internal	External
	Level of expertise	High, certified counselor	Low, peer groups
	Confidentiality	High	Low

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 17. Open Coding of Adult Learning Theory

Category	Properties	Dimensional	Range
Adult Learning Theory	Self direction	High	Low
	Experience of learner	High consideration	Low or not considered
	Relevance to learner's problems	High	Low
	Motivators	Internal	External
	Solution focus	Many solutions	One solution

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 18. Open Coding of Literacy Standards

Category	Properties	Dimensional	Range
Literacy Standards	Location	National	Site-based
	Level	High level	Low level
	Source	Job materials	Broad educational literacy standards
	Comprehensiveness	Wide range of categories	Limited range
	Measurement	Varied measures	Single measure
	Definition	Comprehensive	Single literacy skill

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 19. Open Coding of LEA/Vendor

Category	Properties	Dimensional	Range
LEA/Vendor	Use	One of many	Exclusive, one vendor
	Selection	Varied criteria	Single criteria
	Source	Public	Private
	Scope	National	Local or site-based
	Cost	Major factor	Only one of many factors

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

Table 20. Open Coding of Recruitment

Category	Properties	Dimensional	Range
Recruitment	Basis	Job deficiencies	Broad range from job to personal goals
	Attendance	Voluntary	Mandatory
	Relevance of Instruction	Personal orientation	Program orientation
	Level of Instruction	Varied levels, customized to individual	One entry point
	Level of effort	High	Low
	Availability	Company time	Personal time
	Counseling	Available for all workers	Limited availability
	Support	High level at all levels of organization, union, management, workers	Limited support

Open Coding: The process of breaking down, examining, comparing, conceptualizing, and categorizing data.

Dimensionalizing: The process of breaking down a property into its dimensions along a continuum. (Strauss and Corbin, 1990)

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The Third Step of the Study

Axial Coding

Following the open coding process, the researcher began axial coding of conceptual categories. Axial coding involves the reconstruction of the data in new ways using a paradigm. This coding paradigm uses the following list of coding terms.

- Causal conditions: events, incidents, happenings that lead to the occurrence or development of a phenomenon.
- Phenomenon: the central idea, event, happening about which a set of actions or interactions are directed at managing.
- Context: represents the specific set of properties that pertain to a phenomenon.
- Intervening Conditions: the broader structural context pertaining to a phenomenon. These conditions act to either facilitate or constrain the actional/interactional strategies taken within a specific context.
- Action/Interaction: strategies devised to manage, handle, carry out, respond to a phenomenon under a specific set of conditions.

This coding process and the axial coded categories are presented on pages 137-158.

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Axial Coded Categories

Axial Coded Category: Formation of needs analysis committee

Causal Conditions:

The need to form a group to examine problems in the organization indicated by production problems, quality problems, reduced market share, demand for solutions from various groups--workers, management, union. The charge is usually to identify causes for problems and solutions to those problems. The group or committee may be simply mandated from upper management or by the union bargaining agreement.

Phenomenon:

The needs analysis committee is formed to investigate the organizational and individual problems of a company or business. The purpose of the needs analysis may be broad-based and directed to organizational needs or more focused such as on the overall organizational training needs. It may have a single purpose or focus such as workplace literacy.

Context:

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committee initiative, or part of an overall plan to solve or fulfill company missions or goals. Usually, there are symptoms that literacy problems are contributing to the company's lack of satisfactory performance.

Intervening Conditions:

There may be a lack of personnel or lack of expertise to conduct the needs analysis. Some components of the needs analysis process may not be politically viable such as task analysis or assessment of workers. Data may not be available from company records.

Action/Interactional Strategies:

The strategy involves the formation of a committee to direct the needs analysis activities that will gather information from workers, problem records, observations, subcommittees, and interviews. This committee will be responsible for executing the data gathering and analysis procedures.

Consequences:

The outcome of the formulation of the needs analysis committee is to gain the expertise to plan and execute the needs analysis process.

Axial Coded Category: Needs Analysis Planning

Causal Conditions:

The need to carry out the needs analysis in a rational fashion that will allow for meaningful identification of training needs.

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Phenomenon:

Laying out each step of the needs analysis process and specifying who will be involved and how much it will cost and how long it will take.

Context:

The planning takes place in the context of: time; money; technical, political, and cultural factors; and availability of data.

Intervening Conditions:

Goals of the company, bargaining agreements, worker interest, and specific circumstances of the charge to the planning committee.

Action/Interactional Strategies:

By interaction with various representatives on the committee, the feasibility of various steps and components of the plan can be correlated with the options, constraints and other variables that control the development and ultimate design of needs analysis plan.

Consequences:

A needs analysis plan ready for approval and execution.

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Axial Coded Category: Gather data

Causal Conditions:

The need to identify problems, determine training gaps, and improve the company's performance.

Phenomenon:

Conducting surveys, researching company records, gathering documentation, observing workers, conducting assessment, interviewing company workers and supervisors.

Context:

Follows the needs analysis plan and is for the purpose of information gathering to determine literacy needs of the workers.

Intervening Conditions:

Time constraints may be short and availability of workers may be a factor. Political and cultural factors may play a role in the ability to gather sufficient data for later analysis.

Action/Interactional Strategies:

Various subcommittees may be used for each of the data needs, such as literacy standards, plant records, interviews or observations. Workers

may be called to a central location to provide information by questionnaire or use of the DACUM.

Consequences:

Data sufficient for analysis of training needs

Axial Coded Category: Analyze data

Causal Conditions:

The needs analysis plan may set the conditions for the analysis, such as structured interview guides with predetermined categories for analysis. All the data gathered according to plan must be analyzed to determine training needs.

Phenomenon:

The counting of particular variables into more generalized categories by computer or other means to relate the information to the identification of workplace literacy needs.

Context:

The needs analysis plan would determine the contextual setting for analysis of the data by declaring the inputs and conditions under which analysis takes place. Computer analysis or analysis done by an outside vendor are examples.

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Intervening Conditions:

Availability of data, availability of resources (human and computer), time, sensitivity and techniques of those conducting the analysis.

Action/Interactional Strategies:

Using input from various data gathering techniques, the analyst attempts to find the root causes of the various problems under investigation and structure the findings in a way that elucidates solutions to those problems.

Consequences:

Individual and generalized findings that identify training needs or gaps in the performance or workers. In a needs analysis focusing on workplace literacy, these findings would represent the literacy needs of the workforce to be addressed by the workplace literacy training program.

Axial Coded Category: Report findings

Causal Conditions:

The need to structure the analysis of the data in a format that is understandable and useful to leadership and curriculum developers as well as those who are charged with the delivery of the workplace literacy program.

Phenomenon:

The reporting of training needs (conclusions and recommendations) using written reports and presentations to leadership and other decision-makers.

Context:

The context may vary from a presentation to a single individual such as the CEO or training manager to various subcommittees such as joint national or joint local (union and management) committees charged with decision-making regarding the merit of the proposed program. Workers of the company may be involved at this point as well.

Intervening Conditions:

Conditions affecting the decision based on the training report include: 1. funds available; 2. technical, political, and cultural factors in the workplace; and 3. other priorities of the company.

Action/Interactional Strategies:

The presentation of the report explaining the findings of the needs analysis is a communication strategy to persuade decision-makers (CEO, managers, union, workers) to follow the course of action recommended by the needs analysis report. Other strategies include delivery of the report to

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Consequences:

The recommendations of the report may be accepted in full and result in execution of the plan. Other consequences include acceptance with alterations or outright rejection of the plan.

Axial Coded Category: Formation of curriculum design team

Causal Conditions:

The need for curricular expertise to develop the workplace literacy program curriculum is the primary causative factor in the formation of the team. However, administration, planning, assessment, delivery, and evaluation expertise are additional reasons for the formation of this committee.

Phenomenon:

The formation of the design and development team.

Context:

The setting can be a local design team creating curriculum for a local set of training needs or a national team designing a curriculum for use throughout the country or perhaps worldwide. May be a mandated curriculum with exact certification requirements. Generally, with increasing

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scope of curriculum use, the more sophistication and expertise needed on the committee.

Intervening Conditions:

Availability of team members, perceived inputs to the design and development process, location of various content experts, funding, past practice, bargaining agreements as to committee membership, and scope of project. The organization may have an ongoing contract with a vendor for design and development of curricular materials.

Action/Interactional Strategies:

The major strategy for the design and development team is to use each team member's expertise to design and develop the workplace literacy curriculum integrating the substantive concepts that govern each area of concern. Without this integrating strategy, the effort is bound to experience operational problems during execution of later steps in the planning and delivery process.

Consequences:

The inclusion of human resources who possess knowledge and expertise regarding the major controllable variables being considered during design and development of the workplace literacy program is the major outcome or goal of committee formation. This inclusion should provide a

high degree of assurance that the resulting program will address the organization's identified needs and will address those needs in ways most favorable to measurable success given the technical, political, and cultural context.

Axial Coded Category: Curriculum design and development

Causal Conditions:

The need to develop a workplace literacy program curriculum.

Phenomenon:

The development of goals, performance objectives, learning activities, instructional content, methods of assessment and evaluation, and delivery methodology occur during the design and development of the workplace literacy curriculum.

Context:

The context could vary considerably depending on the scope of the program under development. For instance, if resources are limited and the scope of the project is local, the various functions of design and development might be combined and performed by a few individuals. The outcome of this situation might be favorable if the organization is small or has few bureaucratic rules governing its activities. On the other hand, if the program is intended to serve the needs of a large organization or is national

in scope with bargaining agreements and a multitude of organizational rules (formal and informal), such an approach might prove disastrous.

Intervening Conditions:

Literacy level of the workforce, funding, time, existing instructional resources (material, equipment, facilities, instructional design system currently used), bargaining agreements, and cost benefit analysis represent intervening conditions to the design and development process.

Action/Interactional Strategies:

The strategy for design and development of the workplace curriculum is to produce a curriculum that will address the literacy needs of the organization in the most effective and efficient manner. Interactional strategies are the use of inputs from individuals and other sources that elicit a wide range of options with respect to the controllable variables (including the recognition of uncontrollable variables) that influence the design of the curriculum.

Consequences:

A workable curriculum that addresses an organization's particular literacy needs.

Axial Coded Category: Develop T-3 Curriculum

Causal Conditions:

The need to prepare instructors to deliver the workplace literacy program consistent with curricular design and specified process.

Phenomenon:

The development of a train-the-trainer curriculum that will prepare the training staff with the characteristics of the target population; the curriculum and instruction to be used; the outcomes expected as a result of the instruction, and; administrative and logistical considerations for delivery of the program.

Context:

If an organization uses internal trainers, then certain aspects of the T-3 curriculum can be omitted as the trainers probably will be familiar with the technical, political, and cultural context. If outside trainers or vendors are used, then the training context changes because the outside trainers will not be familiar with organizational practices. If the training effort is locally centered, then administration and logistics will not be as complex as in the situation where the program will function from a national level outward to many plants and locations.

Intervening Conditions:

There might be bargaining agreements that dictate who will train. There might be vendors under contract that constrain the choice of T-3 materials and/or selection of instructors. The current or prescribed level of trainer skill must be considered in the development of T-3 materials.

Action/Interactional Strategies:

The close interaction between the workplace literacy curriculum developers, T-3 developers (if different persons), delivery specialists, and assessment and evaluation experts is needed to ensure a T-3 curriculum that addresses the particular training context of the organization and the proposed outcomes of the literacy training.

Consequences:

A train-the-trainer curriculum that has considered the major controllable variables involved with delivery of literacy training.

Axial Coded Category: Plan pilot

Causal Conditions:

The need to plan a course of action for the delivery of the pilot(s) to determine the appropriateness of the workplace literacy program.

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Phenomenon:

Planning by using the journalistic questions of when, where, who, how, and what regarding the pilot training.

Context:

The pilot plan must be determined in the context of the controllable variables--such as time, location, cost, revision capabilities, availability of instructors, availability of participants, and the variance of instructor and/or participant skill levels. There may be the desire to try out several options for training at different locations.

Intervening Conditions:

Preexisting conditions such as vendor agreements, bargaining agreements, national or local scope, and existing T-3 methodologies and/or instructors. There may be several instructional strategies involved in the pilot that necessitate different pilot plans.

Action/Interactional Strategies:

The pilot plan should attempt to address all of the questions that are of concern in the ultimate delivery of workplace literacy training. Examples of these questions are: Does the curriculum work--does it produce the desired outcomes? Which instructional methodology is best? Are the timeframes for instruction appropriate? Are instructors adequately prepared by the T-3?

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Do our monitoring and evaluation tools work? Are costs of running the program in line with projections? Do the participants enjoy the learning and see relevance to the training? The answers to these questions and others should direct our revision efforts.

Consequences:

A well planned pilot program that, when delivered, will provide needed information to select the best instructional methods and/or indicate whether the curriculum and training are working as designed.

Axial Coded Category: Pilot workplace literacy program

Causal Conditions:

The need to test the viability of the workplace literacy program and all its various components: the literacy curriculum, the instructor training, delivery, assessment and evaluation procedures, counseling, reactions, and learning outcomes of the participants.

Phenomenon:

The execution and delivery of the workplace literacy program under conditions equal to or approximating its intended actual use. The pilot's purpose is to verify and validate the content, process, and procedures of the proposed workplace literacy curriculum and the instructional practices to be employed otherwise known as a "reality" check.

Context:

Several contexts may exist for the pilot of the workplace literacy program depending on size, scope, and/or the pilot of several curricular options. In the case of a singular intended methodology at a local level, one pilot class may be sufficient to verify/validate the workplace literacy program. In the case where multiple strategies are being employed and the program is intended for a large national audience, several pilots at different locations may have to be conducted. The pilot delivery team may want to employ successive stages of revision and retrial to achieve maximum effectiveness over a period of time.

Intervening Conditions:

The use of an outside vendor (LEA, integrated learning system,) may limit the location, curriculum, and subsequent revision of the workplace literacy program. Availability of staff, participants, locations, or funding may constrain the pilot effort.

Action/Interactional Strategies:

The interactional strategy is to subject the literacy program to actual conditions of intended use and verify/validate its effectiveness using feedback from all involved parties.

Consequences:

Validation of the workplace literacy program and/or feedback information to correct its deficiencies. Of course, the most negative consequence would be feedback indicating that the program is incapable of producing the predicted outcomes and is destined for the scrap heap.

Axial Coded Category: Revise program

Causal Conditions:

The pilot(s) indicated a need to revise the workplace literacy program in specified ways.

Phenomenon:

Consists of design changes in curricular content, instructional methodology, and procedural changes in the workplace literacy curriculum, T-3 curriculum, or instructors based on pilot feedback.

Context:

One context is that of an internally developed program at one location that was piloted in the "draft" mode and is able to be revised with few limitations according to feedback from the pilot. At the other end of the contextual spectrum is the program which is national in scope and uses several predetermined curricula with fixed technology and thus can be revised only in a limited fashion.

Intervening Conditions:

Preexisting vendor agreements, politics of the workplace or in the leadership (union and management) position, and time and cost constraints can play a major role in revision efforts.

Action/Interactional Strategies:

The major strategy in the revision process is avoidance of "freezing" the revision options before the literacy program can be piloted and adjusted according to feedback. This can be done by using more than one vendor for the pilot, using "draft" materials for the pilot, and by not communicating the program to leadership and intended audiences prematurely as "complete."

Consequences:

The completion of the workplace literacy program ready for planning the final stages of delivery to the workforce.

Axial Coded Category: Formation of the delivery team

Causal Conditions:

The need to bring together the human resources necessary to carry out planning and delivery of the workforce literacy program.

Phenomenon:

The formation of a delivery team to plan and deliver the workforce literacy program.

Context:

The formation of the delivery team attempts to involve all those areas of expertise necessary to plan and deliver the workplace literacy program. Each functional area involved in delivery requires expertise. The size of the delivery team depends on the scope of the project and the expertise of each of the team members.

Intervening Conditions:

An implementation or delivery team may already exist for some organizations. Thus, this step may consist of adding members or structuring the team in ways beneficial to the delivery of the workplace literacy program. If the program is to be delivered by an outside vendor, then the formation of this team may consist of arranging interactional strategies between the organization and the vendor.

Action/Interactional Strategies:

The strategy of team formation is to incorporate the necessary expertise to plan and deliver the workforce literacy program.

Consequences:

A delivery team equipped to plan and deliver the workplace literacy program.

Axial Coded Category: Develop WPLP delivery plan

Causal Conditions:

The need to plan and organize the implementation of the workplace literacy training program.

Phenomenon:

The development of a detailed plan which describes the materials, equipment, trainers, timelines, facilities, recruitment and selection procedures, and costs to deliver the workplace literacy program.

Context:

The planning is done in view of the options available to a particular organization, the scope of the literacy problem, and the intended solution.

Intervening Conditions:

The size of the target population, bargaining agreements, vendor relationships, cost, timelines, and technology are major inputs to the delivery planning process

Action/Interactional Strategies:

The delivery plan determines strategy for the placement and use of all the resources that will be used to deliver workplace literacy training.

Consequences:

A delivery plan that specifies the techniques, costs, and timelines for producing the desired outcomes of the literacy program.

Axial Coded Category: Deliver WPLP

Causal Conditions:

The need to execute the workplace literacy training.

Phenomenon:

The delivery of workplace literacy training to the target population.

Context:

The context may vary from delivery of a single workshop to address the specific literacy needs using functional context materials in one department of a company to a national (or global) effort which incorporates the entire training resources of the company using a variety of vendors, curricula, and instructional methodology over a period of years.

Intervening Conditions:

The cost, availability of participants, instructors, and other resources as well as bargaining agreements and changing priorities of the company.

Action/Interactional Strategies:

A wide range of delivery options may be available or the options may have been constrained during the curriculum design and/or delivery planning. The main strategy of the delivery process is to provide structured learning activities for workers to learn new literacy skills.

Consequences:

Workers possessing the necessary literacy skills to perform their jobs or learn new job skills.

The Fourth Step of the Study

Selective Coding

Selective coding is a process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development. (Strauss & Corbin, 1990, p. 116)

Selective coding procedures (this was done graphically using systems theory--see Figures 3, 4, 5) resulted in three major categories (social processes) which the researcher named as:

Phase One: Needs Analysis

Phase Two: Curriculum Design and Development

Phase Three: Delivery of the Workplace Literacy Program

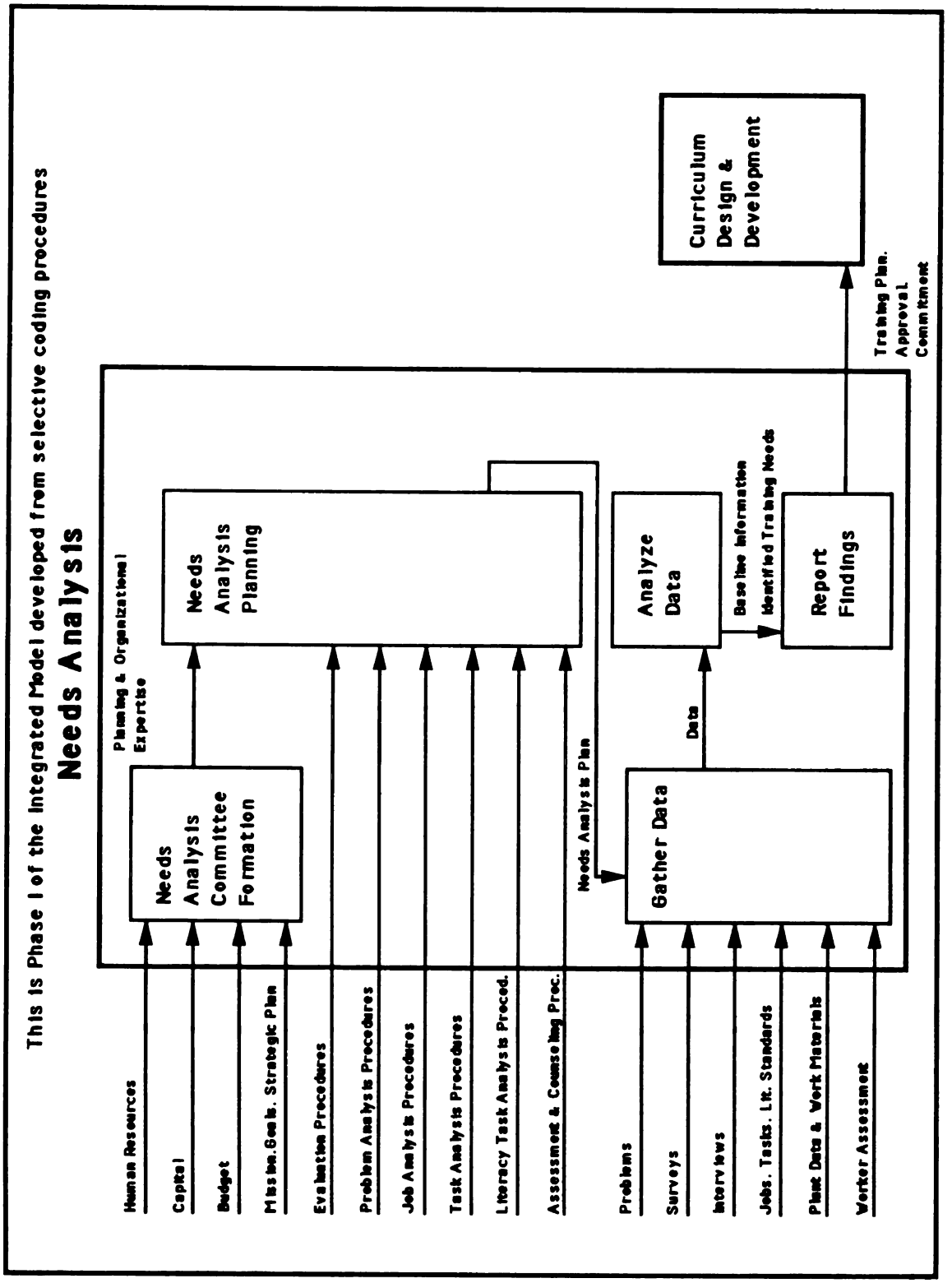

Figure 3. Needs Analysis

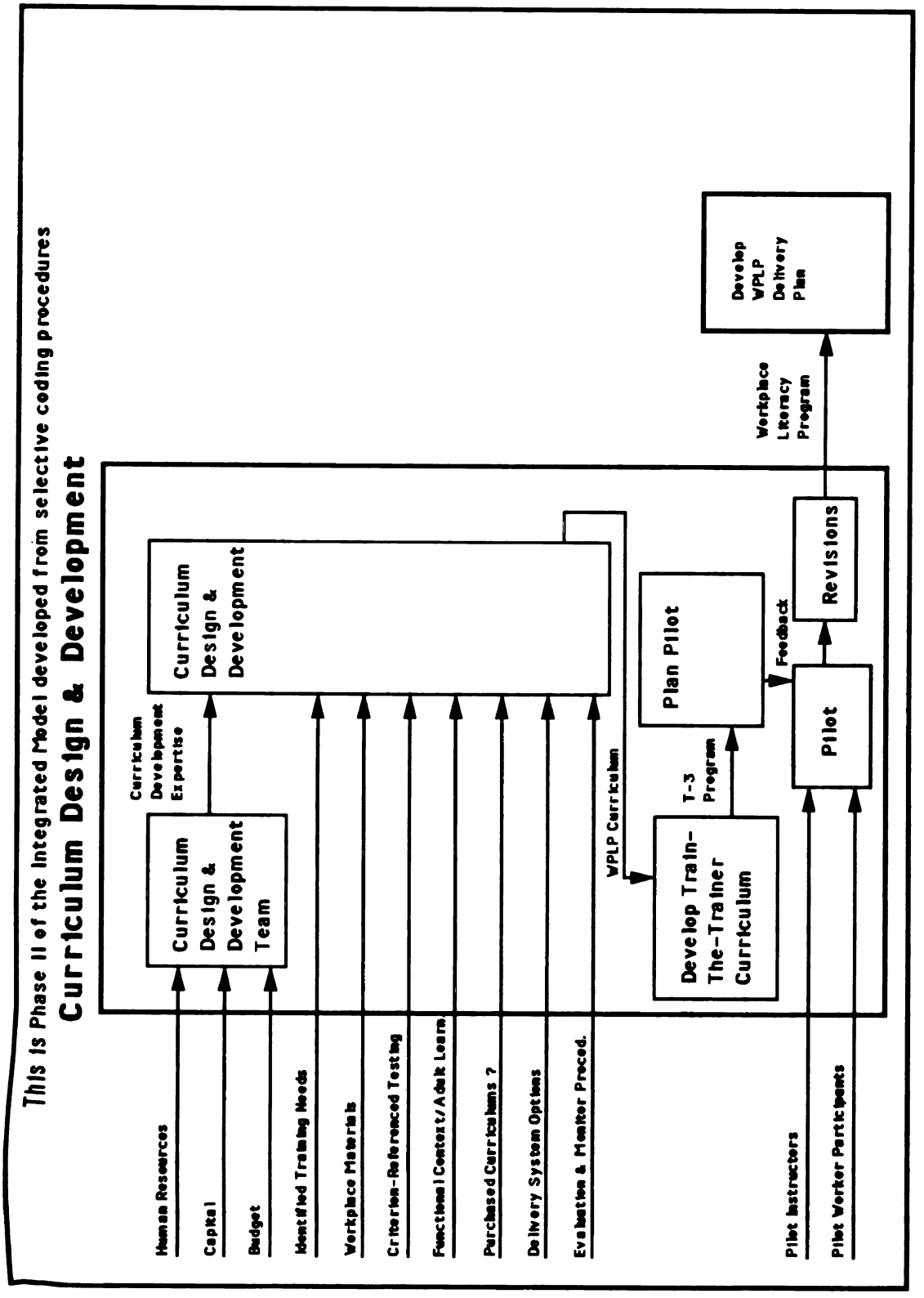

Figure 4. Curriculum Design & Development

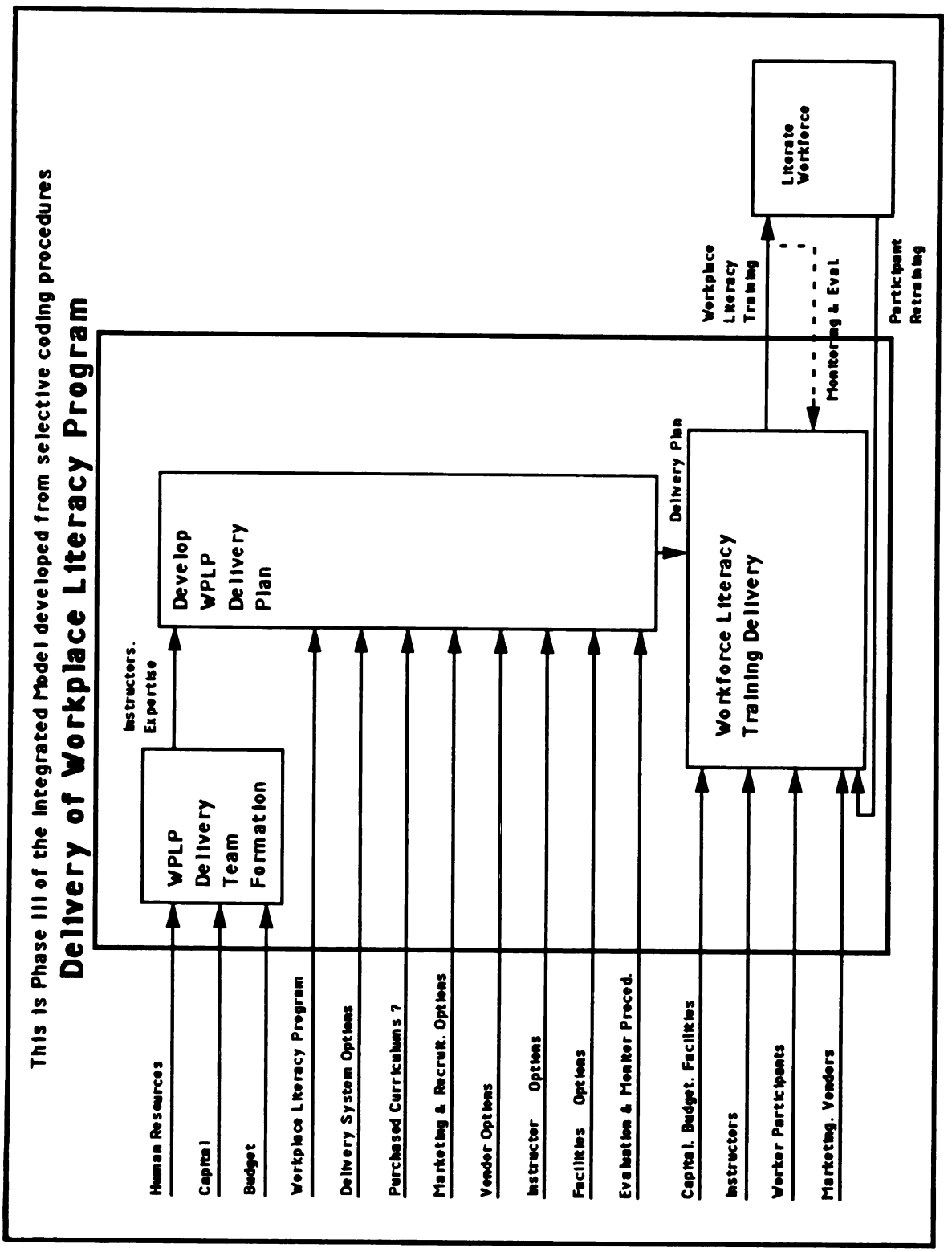

Figure 5. Delivery of Workplace literacy Program

The Fifth Step of the Study

Construct an Integrated Workplace Literacy Model

This step was performed graphically by reconstructing each of the basic social processes (major categories contributing to the core category) and is presented in Figure 6 on page 164.

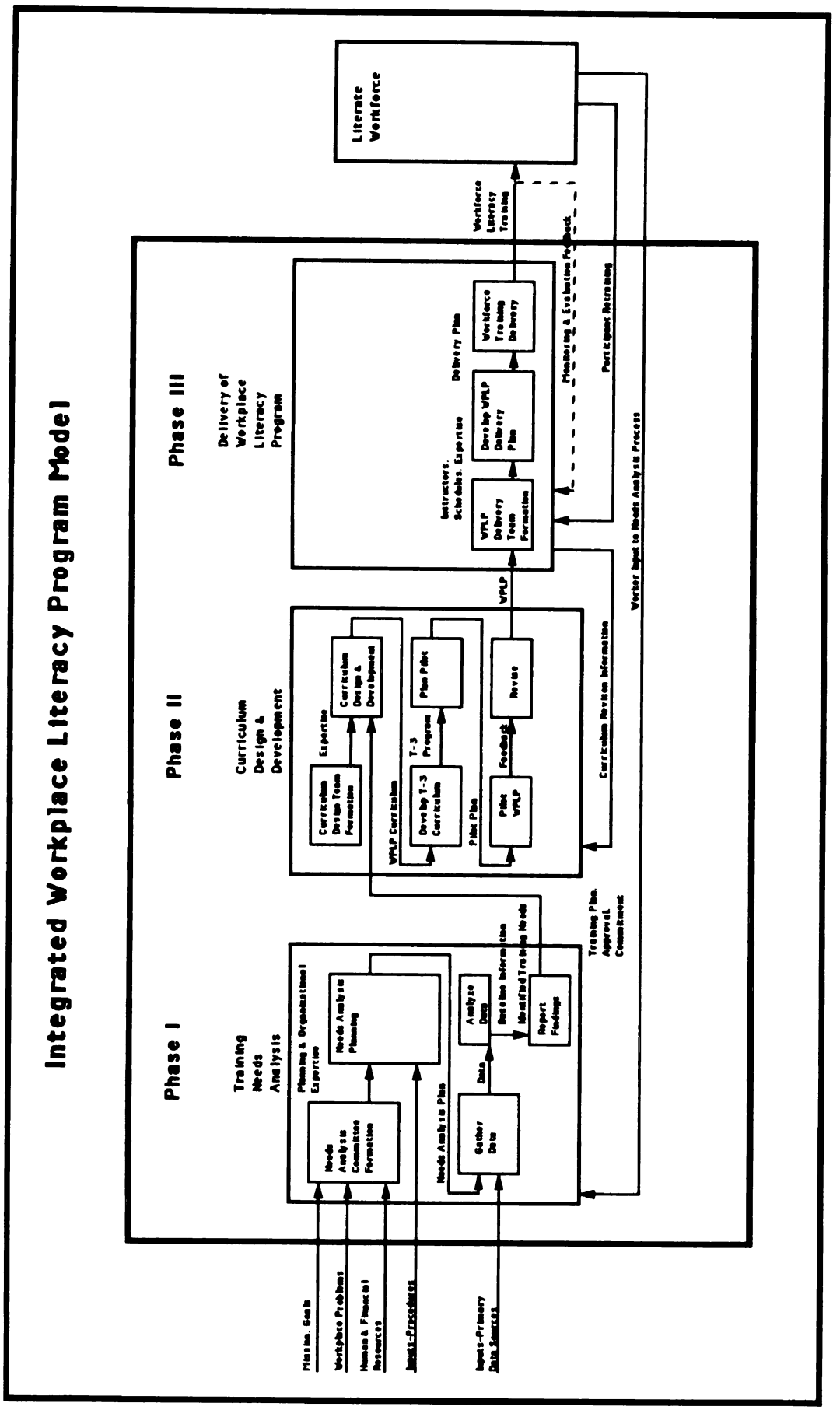

Figure 6. Integrated Workplace Literacy Model

The Sixth Step of the Study

Review of the "Integrated Workplace Literacy Model" by Selected Experts

The model was sent to literacy program review experts and each reviewer felt that the model was complete, easily understood, and would contribute to the field. The researcher did not receive any further suggestions for revision.

Summary

In this chapter, the researcher presented the analysis of the data which followed grounded theory methods and presented graphic models of the Integrated Model and its three phases: needs analysis, curriculum design and development, and delivery of the workplace literacy program. Additionally, the major categories were presented in tables showing their various dimensional qualities. In the next chapter, the researcher will present the *story line* and the *story* of the Integrated Model, which follows grounded theory methods.

CHAPTER IV

FINDINGS

Presentation of the Integrated Workplace Literacy Model

Introduction

After considerable analysis of the data, three major steps or conceptual categories emerged to create the substantive theory model for an *Integrated Workplace Literacy Model* which the researcher will refer to as the *Integrated Model.* These three phases (process steps) are commonly seen as discrete steps in training program development. But as the reader shall see, the focus on *workplace literacy* causes a shift in the properties and dimensions of each of these conceptual phases. This change in properties and dimensions is an integrative one and cascades from the first phase--*Needs Analysis* down through the last phase--*Delivery of Workplace Literacy Program.* The researcher chose to use these somewhat established categories or phases to simplify the interpretation of the Integrated Model by the reader. The risk to this practice is reinterpreting and verifying

established concepts rather than creating new substantive theory grounded in the phenomena of the data involved in this study. The researcher made every effort to avoid acceptance of concepts solely on the basis of their prior standing in the training and education community.

The model was presented in Figures 3, 4, 5, and 6 graphically using systems theory methods to assist in the reader's understanding.

The three phases consist of (1) needs analysis, (2) curriculum design and development, and (3) delivery of workplace literacy program. Each of these phases has a number of substeps involving inputs, process, and product. In general, each of the steps follows from the previous in sequential order. In most cases, depending on the scope of the project, there will be some overlap between the completion of one step and the beginning of the next step. As we shall see in the discussion ahead, planning and evaluation are recommended as a continuous process throughout the development and subsequent delivery of the workplace literacy program.

Strauss & Corbin (1990) recommend the development of a *Story Line* to conceptualize the narrative story that follows and describes the central phenomenon (core category) of the study. The researcher presents this conceptual story line in Table 21 using an outline format.

Table 21.

Integrated Workplace Literacy Program

1. **NEEDS ANALYSIS**
 1.1. Process elements
  1.1.1. Needs analysis committee formulation
   1.1.1.1. Inputs to the needs analysis committee formation
    1.1.1.1.1. Union representatives
     1.1.1.1.1.1. Union training coordinator
     1.1.1.1.1.2. Union leadership
    1.1.1.1.2. Management representatives
     1.1.1.1.2.1. CEO or high level management representative
     1.1.1.1.2.2. Manager of education and training
     1.1.1.1.2.3. Manager of human resources
    1.1.1.1.3. Training consultant
    1.1.1.1.4. Organizational change strategist
    1.1.1.1.5. Workers
     1.1.1.1.5.1. Expert workers representative of workplace areas under consideration
    1.1.1.1.6. Funding
    1.1.1.1.7. Business goals. strategies. mission
   1.1.1.2. Outputs
    1.1.1.2.1. Planning and organizational expertise
  1.1.2. Needs analysis planning
   1.1.2.1. First step is define purpose of committee
    1.1.2.1.1. Inputs
     1.1.2.1.1.1. Literacy related workplace problems
     1.1.2.1.1.2. New equipment/anticipated problem
     1.1.2.1.1.3. Educational preparation for the future
    1.1.2.1.2. Outputs

Table 21. Continued

1.1.2.2. Second step is to plan training needs analysis process
1.1.2.2.1. Inputs
1.1.2.2.1.1. Planning & organizational expertise of committee
1.1.2.2.1.2. Funding
1.1.2.2.1.3. Planning budget
1.1.2.3. Third step is to gather information for training needs analysis plan
1.1.2.3.1. Inputs
1.1.2.3.1.1. Data analysis procedures & options
1.1.2.3.1.2. Problem analysis procedures
1.1.2.3.1.3. Job analysis procedures
1.1.2.3.1.4. Task analysis procedures
1.1.2.3.1.5. Literacy task analysis procedures
1.1.2.3.1.5.1. Use generic and nationally developed literacy tasks as reference
1.1.2.3.1.6. Assessment procedures
1.1.2.3.1.6.1. Training purposes only
1.1.2.3.1.6.2. Confidentiality is big issue
1.1.2.3.1.6.3. Performance-based assessment
1.1.2.3.1.6.4. Use standardized testing only when appropriate for situation
1.1.2.3.2. Outputs
1.1.2.3.2.1. A plan for conducting the TNA
1.1.3. Gather data
1.1.3.1. Inputs
1.1.3.1.1. TNA plan
1.1.3.1.2. Problems
1.1.3.1.3. Surveys
1.1.3.1.4. Interviews
1.1.3.1.5. Jobs. tasks. LTA standards
1.1.3.1.6. Plant data
1.1.3.1.7. Worker assessment
1.1.3.2. Outputs
1.1.3.2.1. Data for analysis

Table 21. Continued

1.1.4. Analyze data
1.1.4.1. Inputs
1.1.4.1.1. Data for analysis
1.1.4.1.2. Data analysis procedure
1.1.4.2. Outputs
1.1.4.2.1. Identified training needs
1.1.4.2.2. Baseline information for program evaluation
1.1.5. Report findings
1.1.5.1. Training plan
1.1.5.2. Interpretation to leadership

2. **DESIGN & DEVELOP CURRICULUM**
2.1. Process elements
2.1.1. Formation of curriculum design & development team
2.1.1.1. Inputs
2.1.1.1.1. Training & education coordinators
2.1.1.1.2. Instructional designers/curriculum writers
2.1.1.1.3. Evaluation specialist
2.1.1.2. Outputs
2.1.1.2.1. Curriculum development expertise
2.1.2. Curriculum design & development
2.1.2.1. Inputs
2.1.2.1.1. Job and task analysis listing drives learning objective development
2.1.2.1.2. Learning activities specifically address each learning objective
2.1.2.1.3. Use objective or criterion-referenced testing
2.1.2.1.4. Use workplace materials
2.1.2.1.5. Use the workplace or simulate workplace tasks for instruction (functional context)
2.1.2.1.6. Assessment/testing instruments
2.1.2.1.7. Performance-based not time based
2.1.2.1.8. Can the curriculum be purchased?
2.1.2.1.9. What will the delivery method be?

Table 21. Continued

2.1.2.1.9.1. Monitoring and evaluation
2.1.2.1.9.2. Instructional facilities
2.1.2.1.10. Computer-based instruction
2.1.2.1.11. Guided learning center
2.1.2.1.12. Self study
2.1.2.1.13. Interactive computer
2.1.2.1.14. Video
2.1.2.1.15. Multimedia
2.1.2.1.16. Traditional classroom
2.1.2.2. Outputs
2.1.2.2.1. Workplace literacy program curriculum
2.1.3. Develop train-the-trainer curriculum
2.1.3.1. Inputs
2.1.3.1.1. WPLP curriculum
2.1.3.1.2. Instructor qualifications
2.1.3.2. Outputs
2.1.3.2.1. Train-the trainer curriculum
2.1.4. Plan pilot
2.1.4.1. Inputs
2.1.4.1.1. T-3 program
2.1.4.1.2. Schedule
2.1.4.1.3. Instructors
2.1.4.1.4. Worker participants
2.1.4.1.5. Location & Facilities
2.1.4.1.6. Evaluation observers
2.1.4.2. Outputs
2.1.4.2.1. Pilot plan
2.1.5. Pilot workplace literacy program
2.1.5.1. Inputs
2.1.5.1.1. Conduct pilot T-3 program
2.1.5.1.2. Conduct pilot WPLP
2.1.5.1.3. Evaluation method
2.1.5.2. Outputs
2.1.5.2.1. Feedback for revision
2.1.6. Revise workplace literacy program
2.1.6.1. Inputs
2.1.6.1.1. Feedback from pilot
2.1.6.2. Outputs
2.1.6.2.1. Revised T-3 & WPLP

Table 21. Continued

3. DELIVERY OF WORKPLACE LITERACY PROGRAM
- 3.1. Process elements
  - 3.1.1. Formation of the delivery team
    - 3.1.1.1. Inputs
      - 3.1.1.1.1. Training delivery coordinator
      - 3.1.1.1.2. Instructional delivery vendor(s)
      - 3.1.1.1.3. Funding
      - 3.1.1.1.4. Instructors
    - 3.1.1.2. outputs
      - 3.1.1.2.1. Instructors
      - 3.1.1.2.2. Training program delivery expertise
  - 3.1.2. Develop WPLP delivery plan
    - 3.1.2.1. Inputs
      - 3.1.2.1.1. Workplace literacy program curriculum
      - 3.1.2.1.2. Delivery system options
      - 3.1.2.1.3. Purchased curriculums
      - 3.1.2.1.4. Marketing & recruiting options
      - 3.1.2.1.5. Vendor options
      - 3.1.2.1.6. Instructor options
      - 3.1.2.1.7. Facilities options
      - 3.1.2.1.8. Evaluation & monitoring options
    - 3.1.2.2. Outputs
      - 3.1.2.2.1. Delivery plan
  - 3.1.3. Workforce literacy training delivery
    - 3.1.3.1. Inputs
      - 3.1.3.1.1. Instructors
      - 3.1.3.1.2. Worker participants
      - 3.1.3.1.3. Facilities
      - 3.1.3.1.4. Funding
      - 3.1.3.1.5. WPLP curriculum
      - 3.1.3.1.6. Delivery schedule
    - 3.1.3.2. Outputs
      - 3.1.3.2.1. Workplace literacy training
      - 3.1.3.2.2. Monitoring & evaluation feedback

The next section-- The Integrated Model story--follows Strauss & Corbin's recommended final step in the grounded theory process--the use of a descriptive narrative about the central phenomenon under study to present the substantive grounded theory. In *Awareness of Dying* (Glaser & Strauss, 1965), virtually the whole book was dedicated to writing the story about their grounded theory research in hospitals. They wrote about the various contextual aspects of dying--the context of *open awareness* and of *closed awareness*. The structural conditions of each of these various contexts as well as the consequences of each strategy were elaborated upon using descriptive narrative. To equal this feat, the researcher would have to write a dissertation with several hundred pages of text for just a few of the possible contextual settings having to do with workplace literacy. Therefore, the researcher made the decision to limit the story's major emphasis to that of a large company even though some comments are made about variations in strategy that might be used in a somewhat smaller context.

The Integrated Model Story

Needs Analysis

The initial indicators of literacy problems in the workforce for most business and industry may be manifested by poor quality products or

complaints of inferior services in the workplace. The cost of goods or services may have become uncompetitive resulting in reduced market share.

These indicators usually trigger an investigation into the causes of a particular market problem. The company may start with an informal inquiry into the problem or, in the case of larger organizations, conduct a formal needs analysis procedure in an attempt to determine the root causes of one or more problems. Another situation which demands attention to workplace literacy is when the organization is undergoing a structural change that reduces the level of technical expertise at mid-level thus reducing the hierarchical layers in the organization. This flattens the organizational structure and moves the level of responsibility and need for expertise to the bottom layers of the organization. When this occurs, many workers may be totally unprepared, in the literacy context, to perform or accept these changed working conditions. A company's leadership must carefully analyze its situation, with a view towards literacy levels of its workforce, to determine the strategic response that is appropriate. Just simply asking workers to do more and increasingly complex tasks without putting mechanisms in place to prepare them for this changed role will, more than likely, result in failure.

The selection of a committee to oversee the needs analysis process involves the recognition of the many technical, political, and cultural factors that must be addressed in a change effort. There should be involvement of the top leadership (management and union) to convey the importance of the endeavor. Additionally, the incorporation of the company's strategic goals or the restatement of these goals in light of the literacy effort should be an input to the committee's work. Technical expertise is needed to plan and execute the needs analysis process as well as the adjustment of the technical, political, and cultural factors that accompany the company's changing structure . This expertise usually resides in human resource individuals such as training coordinators, and human resource specialists, and organizational consultants. In addition to the planning and administration of the needs analysis process, other inputs are essential to the committee's functioning,

Among these inputs are expertise in the areas of: assessment, evaluation, delivery, computer-based training, counseling, and worker performance. Many formal needs analysis methodologies are present in the literature and others exist as bureaucratic procedures within an organization.

The fundamental process is to track down the causes of a particular problem or problems and correct the process, retrain the worker, change the source of a subcomponent, or some other corrective action. This is a reactive

response. Two other situations that may occur in business that require proactive response by business are the introduction of new process or technology; and projected training and certification requirements for workers sometime in the future. In all these situations, some sort of needs analysis or assessment is necessary to identify particular needs of the business--be it to correct a problem, replace equipment, or retrain workers.

Training needs analysis, which may be conceived of as a substep of the needs analysis process, addresses the identification of training needs among an organization's workers. Once problems of human performance have been identified by broad investigation, then specific training responses can be devised. In order to determine these responses, several informational items must be known. First, job analysis will result in a listing of all jobs in the organization with descriptions of general duties being performed. Second, each of these jobs can be further detailed in terms of specific duties and tasks by task analysis (process) resulting in a task listing or more commonly called a task analysis (product). Before the current emphasis on workplace literacy, the task analysis *detailing* was the lowest level of detail used to describe what competent workers must do and know to perform their jobs. This detailing was commonly called the "skills and knowledge." With the new emphasis on workplace basic skills, the third step, *literacy task*

analysis is now the accepted term of choice to describe the process of examining worker tasks to determine the embedded basis skills (Sticht, 1975) , (Phillipi, 1991).

In order to establish a basis for comparison for the embedded literacy skills, literacy standards must be consulted. These standards are available from a wide variety of sources, both public and private, and vary considerably in their depth and scope (see REVIEW OF RELATED LITERATURE for examples). Once a choice of standards is selected, some form of assessment of workers or sample of workers must take place to determine training gaps. Inherent in the choice of literacy standards and the associated assessment procedures is the role of assessment itself.

Assessment in the workplace, especially in the union workplace, is a highly controversial procedure. Most jobs in the unionized workplace are determined on the basis of national or local bargaining agreements and workers' rights to these jobs are, to a great degree, based on seniority. In addition, there are often great differences between what is performed on a particular job from one location to the next even though the job name may be the same. These factors, as well as others, make assessment from a national perspective especially difficult. This means that the use of nationally recognized assessments such as the TABE , ABLE, CASAS, and

others may be inappropriate for some situations even though many sources of funding require the use of such tests to measure the gains or learning outcomes from literacy training programs.

During an interview conducted for purposes of this study, Benjamen (May, 1993), an assessment specialist , offered the following information regarding workplace literacy and assessment:

> Assessment for workplace literacy is part of the entire design process. First of all, the need for a workplace literacy program at all would be determined. Are there jobs in the work setting for which the workers are under prepared? Are there new job demands or technology that are giving workers difficulty? How have the problems been identified and by whom? Is this work location willing to spend the necessary time and money to develop an effective program? Feedback from workers, managers, union officials, and quality control officers is critical. After the need is identified, then a complete analysis of the critical skills necessary to perform the job must be done. When the critical skills are identified, then an assessment of the workers' skill must be completed to determine the gaps in their training. Training must then be developed based on the previous assessments. Assessment would be developed to measure how satisfactorily training is meeting the established goals or benchmarks. At the conclusion of the project, success of the program would be measured through improved job performance (quality control measures, cost benefits, less scrap, etc.) and to some extent, worker/company satisfaction.

In concept, if certain literacy standards are adopted for a particular training situation, then the assessment devices must somehow be linked to the literacy standards if learning gains are to be measured appropriately. One strategy for dealing with this dilemma is to use only workplace materials for development of the job analysis, task analysis, literacy task

analysis, and the subsequent assessment devices used to diagnose worker needs and measure learning outcomes. In this case, the only nationally recognized component would be the use of some literacy standard to assist in the literacy task analysis. All of the steps in the needs analysis process must be carefully planned, including the development of the training plan and its interpretation to the leadership of the organization.

Now that the complexity of the needs analysis process has been established, the need for competent expertise to plan and carry out the process should be an acceptable fact. The early consideration (the integration of needs analysis process, assessment, counseling, evaluation, and delivery) of the major factors that may affect the ultimate delivery of workplace literacy training is an important feature of the Integrated Model.

The actual execution of the needs analysis plan will rely on properly prepared interviewers, advance promotion and the explanation of the purposes of the needs analysis to the workforce and others affected. Make sure that the workforce knows and accepts that the information they give for the task analysis, literacy task analysis, and assessment will be used for training purposes only and will be held in confidence. When constructing questionnaires, get expert help, as this can be a complex process. Use computers in the analysis process whenever possible. When presenting the

training plan to the leadership, do not get too detailed. Provide general results and give options to the leadership, but have a recommendation.

Curriculum Design and Development

The first step in the design and development of the workplace literacy curriculum is the formation of the curriculum design and development team.

The members of this team, as in the case of the needs analysis committee, should possess skills that are crucial to the design and development of the workplace literacy curriculum. Input needed on the team includes instructional design, assessment, evaluation, and delivery. The instructional designer should be familiar with adult learning theory, workplace literacy, and computer-based training. The curricular strategy will depend on numerous contextual factors. First, did the needs analysis indicate literacy training needs across a broad spectrum of basic skills? If so, the designer should consider the development of a literacy curriculum that addresses most, if not all, of the basic skills areas. This might also suggest that one of the major integrated learning systems might be useful as standalone systems or as distributed networks, depending on the size of the target population. Most of the integrated learning systems have built-in instructional management systems and assessment capabilities as well as their instructional capabilities.

If there is only a limited number of basic skill deficiencies, then the strategy might be to develop a curriculum that uses the workplace materials associated with the skill deficiencies. As the curriculum development proceeds--from goals to objectives to learning activities to content development to assessment and evaluation to delivery options, individuals with expertise in these areas will have to contribute to the overall design and development if the finished product is going to function in an efficient and effective manner. In many organizations, systems already exist for training development and delivery, including equipment, materials, facilities, and specified delivery methodologies. These existing systems require careful consideration before much time, effort, and money are spent in curriculum development that may go astray in view of these existing resources and capabilities.

Carter, in an interview for purposes of this study (May, 1993), offered these suggestions regarding curriculum design and development:

> Obviously, on the front end, there has to be some establishment of needs--how are you going to identify the needs? Is it going to be a general assessment? How are you going to identify your target audience? How are you going to define literacy? How many people are in this audience? These are questions that have to be answered in terms of selection of delivery. These are critical questions that have to be answered in the planning stage. What are the resources? What are the constraints? Where are you going to get your hands on the curriculum materials? Do materials exist? Do they have to be custom- developed? . . . A big question in my mind on the front end is how do you plan to evaluate this program? How

> will you know if this program has been successful? What are you looking for? What are the planning issues? Who is going to be involved in the design of the curriculum? I would like to know how the needs assessment was done to determine if it was valid. How large a sample? In my mind, I would begin to look at general content areas. Okay, do we have a problem with reading? Do we have a problem with mathematics? Do we have reliable information that tells us that many of the people in this organization can't read beyond the third grade? From that point, I would look at learning experiences? What exists? I have to have some knowledge of the expected outcome. We have to have some window of where we are and where it is we have to go. I would still form some broad categories--we have a reading need--we have a writing need--we have a mathematics need. I would be thinking in terms of general content area first, and then what kinds of activities--what kinds of programs--what are the viable ways of improving skills in these areas? What are the performance objectives? What's missing? What are we going to have to create? It's critical that literacy programs be application-based. I think there is too much generic--what I would call elevated Dick and Jane--type of materials. I don't think they do anything to teach problem-solving. I would be looking for problem-solving elements.

Most of Carter's comments reinforce the idea of integration of planning, design and development of curriculum, and ultimate delivery of the workplace literacy program as suggested by this study.

If counseling is included in the intended literacy services, then the issues of confidentiality will have to be addressed. In another interview conducted with Holliday (May, 1993), the importance of maintaining a separation in the reporting relationships in the counseling process was stressed:

> The company has an obligation to protect itself. If a worker cannot read safety instructions, then the company could be liable. Lets consider three different counseling situations--the first is a situation--lets say where a machinist is not performing his job--I as a labor rep.--a counselor if you will, must assess and counsel the machinist to determine what the problem

> is. I must keep hard data and my responsibility is to the company--to get the machinist to perform. There could be severe penalties for the machinist if he does not take my advice and learn those things indicated by the assessment and my suggestions for his improvement. Lets take another situation, where a worker is looking to better himself--to find out what he must do and learn to qualify for a better job. I can assess and counsel him, but I must make it clear that there are no guarantees that he will get a better job. I keep no hard data available to the company--the process is informal and not a job performance requirement. Lets consider the last situation that can occur--the case where workers are being assessed and counseled to determine literacy performance levels. This can be a very threatening situation to an employee. He doesn't know what the outcome will be. How it will affect his job. For any success in this situation, the counseling role must be segregated from that of the company's representative to the individual's representative. The chasm between the two cannot be bridged. Confidentiality is the big issue.

Holliday's comments clearly point to the main issue for the counseling process in workplace literacy--that of confidentiality.

Another issue in the curriculum design and development process is computer-based training. In an interview with Harrington (May, 1993) the following comments and suggestions were offered:

> I went to a conference about two and a half years ago in Minneapolis-- an adult literacy conference--this was on computer-based delivery of training. I went in there thinking that if you got people with low reading skills, low self-esteem low math skills, low basic adult literacy things--how can they possibly go in on a computer and use typing skills and reading a screen? Interacting with it? Understanding it. I didn't think the computer had a fit there. I thought it was high order--level of skills. They had a panel there of students who were high school dropouts who had gone back into the system to get diplomas, further themselves and get better jobs and as a panel, they got to tell their story, their background., and their experiences with this learning lab out there. It was quite a learning experience for me. As an adult learner, people have a hard time saying -- I can't read. In a normal learning situation, where people walk into a classroom and look around and say "everybody, I can't read". That's intimidating-- Its a big step to say "I can't read , I want to improve my skills"-- to make that less intimidating,

> less threatening. People come into the computer room. Today, we have a computer society, so that even though I have admitted that I can't read or I need to improve my reading skills--they are pretty basic, my family knows that I am going into the computer lab and learning computers. . . . They feel good about this. Again the computer gives lots of feedback, they like feedback. I came out of there completely changed the way I felt about that.

Harrington offered the following advice about considering integrated learning systems. "Set up a plan to identify, evaluate systems, select, implement, and evaluate the system's performance. Don't treat the system as a cure-all, but one of many tools that can free up an instructor's time."

Many of the decisions about the curriculum development process may have been made during the upfront work on the needs analysis. Will the functional context be used? During assessment of the workforce for training gap identification--were the assessment tools determined? Was performance-based assessment used ? Was hardware available for the use of an ILS in the assessment process? Were workplace materials used? Were evaluation methodologies examined? In any case, the curriculum development involves development of goals, objectives, learning activities, content information, and assessment and evaluation strategies. If there is a match between the training gaps and learning objectives in purchased curriculum materials, this might be the best route. Perhaps a LEA/vendor can provide the curricular materials. If so, they may be able to provide the

other services such as assessment, counseling, and delivery of training services. Once the actual curriculum has been developed or plans have been made to purchase curriculum materials , then development of train-the-trainer materials can be done. In planning the T-3, Carnevale (Carnevale, et al., 1990) offers these suggestions:

1. Review of the applied learning perspectives
2. Review of curricula with hands-on practice
3. Familiarization with course objectives
4. Familiarization with procedures and accountability requirements
5. Familiarization with record-keeping
6. One week observing or working on actual jobs for which the training is being provided

Once the T-3 curriculum has been developed, pilots for both instructors and workers can be conducted for a reality check and revisions.

Delivery of the Workplace Literacy Program

The delivery of a workforce literacy program involves the consideration of a number of factors. Most of these factors relate to a series of questions:

1. What are the funding constraints?
2. Are outside vendors involved?

3. What is the instructional strategy?

4. Do we need to train instructors?

5. What facilities do we need?

6. Is computer-based training involved?

7. What is our evaluation strategy?

8. Is attendance mandatory or voluntary?

9. What is the size of the projected target population?

10. What is our delivery schedule?

11. Who is on the delivery team?

12. In-house or purchased curriculum?

Again, this list of questions indicates the need for integration of the needs analysis phase, the curriculum design and development phase, and the delivery phase. If there was interaction between these phases from the beginning of the workplace literacy program development, many of these questions will already have answers. For example, were the identified training needs broad-based across the literacy skills spectrum? If so, the consideration of an integrated learning system could have been considered during the needs analysis stage (assessment and literacy standards strategy); investigated in-depth during the curriculum design and development phase (curriculum and instruction option); and included in the delivery options

being considered during the delivery phase. The selection of the delivery team members should be based on the inputs needed to answer the set of questions listed above. The delivery plan should provide answers to these questions with alternative courses of action and a recommended option. Make sure that the feedback that is received from the training sessions is used--to refine and improve the instructional process.

Summary

In this chapter, the researcher presented the *story line* in an outline format using Table 21. Following the story line, the researcher used Strauss and Corbin's recommended final step in the grounded theory process--the *story*--to present the Integrated Model as a descriptive narrative about the central phenomenon under study.

In the final chapter, a summary of the study along with conclusions and recommendations are presented.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

In this study, using grounded theory methods, the researcher sought to identify a workplace literacy model-- one that incorporated all of the identified contributing concepts; explained the relationships between these concepts; and integrated these concepts into a substantive integrated theory for the development of a workplace literacy program.

The study proceeded according to steps outlined in grounded theory methodology (Glaser & Strauss, 1965), (Strauss & Corbin, 1990) as explained in REVIEW OF RELATED LITERATURE and DESIGN OF THE STUDY.

Data gathered from document analysis, interviews, observations, and expert review contributed to the findings of this study. The operations of memoing, open coding, axial coding, and selective coding resulted in a graphical depiction of the three phases and of the Integrated Model. In

addition to the graphical model, the researcher presented interpretation of the Integrated Model using an outline format to convey the theoretical *story line* (analytical concepts) and a descriptive narrative to convey the *story* (substantive theory).

The Integrated Model which emerged from this study has three phases and a number of process steps to each phase:

Phase One: Needs Analysis

1. Formulation of the needs analysis committee
2. Needs analysis planning
3. Gather data
4. Analyze Data
5. Report Findings

Phase Two: Curriculum Design and Development

1. Formation of curriculum design team
2. Curriculum design and development
3. Develop T-3 curriculum
4. Plan Pilot
5. Revision

Phase Three: Delivery of Workplace Literacy Program

1. Formation of delivery team

2. Develop workplace literacy program delivery plan
3. Deliver workplace literacy program

The Integrated Model stresses the need for interaction between each of the phases as development of the workplace literacy program proceeds.

Conclusions

Success in the development and delivery of a workplace literacy program depends, first, on the careful analysis of the literacy problem. The problem must be defined in terms of the workplace literacy training needs using needs analysis methods that assure that sufficient data input takes place to correctly diagnose the literacy needs. Secondly, the curriculum design and development must be carefully focused on addressing those identified needs, not on some general scheme of literacy performance that is unrelated to these specified training needs. Thirdly, delivery options must be identified and considered early in the program development process.

Finally, planning and interaction (integration) between the phases of needs analysis, curriculum design and development, and delivery of the workplace literacy program is crucial to program success.

Recommendations

The practitioner involved in the development of a workplace literacy program should utilize the findings of this study in the following ways:

1. Realize that the integration of key concepts outlined in this study will keep program development on track with the organization's existing technical, political, and cultural entities and signal where changes in those entities might take place.

2. Use the process of dimensionalizing for the development of key concepts as a means to determine and describe the organization's particular context and its strategic options, given the controllable variables unique to each organization. Each of the 19 conceptual categories developed in this study, as well as additional concepts that may emerge in a particular organization, possess dimensions that can be adjusted for the contextual situation. This can be viewed as analogous to the use of *sliding bar* tone controls and/or volume controls whereby their adjustment and setting in view of the acoustics, environment, and personal taste determine the ultimate quality of the music.

3. Consider the use of *functional context* as a governing principle to integrate the literacy learning within the realm of job performance to increase the relevance of learning.

4. Use systems theory to carefully define the inputs and outputs to each phase of the program development.

5. Generate sufficient inputs to each phase by careful selection of committee and team members involved in the development and delivery of the literacy program thus ensuring meaningful outputs.

6. Consider the value of substantive planning during each phase and across phases during the literacy program development.

7. Use the CIPP evaluation technique or a similar one that stresses involvement of evaluative steps from the onset of the literacy program development to its conclusion.

Recommendations for Further Research

1. Conduct follow-up studies on literacy programs developed using this substantive theory model to verify its application in practical use and provide information to refine its analytical concepts.

2. Conduct follow-up studies using this model or others to generate a variety of contexts and strategic responses to those contexts.

3. Conduct research on the various conceptual categories to increase the density of their theoretical contributions to the field of workplace literacy training.

4. Conduct research that examines the relationships between literacy as defined by the educational community and as defined by the business community in a search for common ground. (See Sticht, 1987, and the researcher's discussion of his finding on page 10 of this study)

5. Conduct research that examines the school-to-work transition in view of the literacy requirements of schools and the literacy demands of the workplace.

Reflections

Although the researcher had selected *workplace literacy* as the topic for this study because of high interest in the area, the design to be used was not apparent at the onset of the study. In fact, original research focused on reviewing literature about workplace literacy without any formal analytical procedures. The information about workplace literacy, with its current

emphasis as one of the problems in American business, was available from many sources-- such as the American Society for Training and Development which has addressed this problem repeatedly in much of its literature over the last five years. Other sources included Jorie Philippi's *Literacy at Work*, The National Center for Research in Vocational Education at The Ohio State University's *Adult Literacy: Skills for the American Work Force*, the Office of Technology Assessment's *Worker Training: Competing in the New International Economy*, the National Center on Education and the Economy's *America's Choice: high skills or low wages*, the Institute for the Study of Adult Literacy's *Upgrading Basic Skills for the Workplace*, as well as magazine articles, journal articles, monographs, and reports from business and governmental agencies. The researcher struggled with the design problem for some time, examining many books and articles on the subject. Finally, the book *Qualitative Research for Education: An Introduction to Theory and Methods* (Bogdan & Biklen, 1982) provided the beginnings of an answer. On page 68, the following paragraph provided the beginning:

The Constant Comparative Method

> As we have suggested, designs of all qualitative studies involve the combination of data collection with analysis. This is clear in the modified version of analytic induction we presented. Analysis and data collection occurred in a pulsating fashion--first the interview, then the analysis and theory development, another interview, and

> more then analysis, and so on--until the research is completed. In most forms of case studies, the emerging themes guide the data collection, but formal analysis and theory development does not occur until after the data collection is near completion. The constant comparative method is a research design for multi-data sources, which is like analytic deduction in that the formal analysis begins early in the study and is nearly completed by the end of the study. As you shall see in our discussion, the constant comparative method differs from analytic deduction in a number of respects. . . . To recount the steps in the constant comparative method of developing theory:
>
> 1. Begin collecting data
> 2. Look for key issues, recurrent events, or activities in the data that become categories of focus.
> 3. Collect data that provide many incidents of the categories of focus with an eye to seeing the diversity of the dimensions under the categories.
> 4. Write about the categories you are exploring, attempting to describe and account for all the incidents that you have in your data while continually searching for new incidents.
> 5. Work with the data and emerging model to discover the basic social processes and relationships.
> 6. Engage in sampling, coding, and writing as the analysis focuses on the core categories. (Glaser, 1978)

Using the above quoted information, the researcher started his search for more information on this research design methodology. This led to *The Discovery of Grounded Theory* (Glaser & Strauss, 1967) and then to *Basics of Qualitative Research* (Strauss & Corbin, 1990). After reviewing these two books, the researcher felt that he understood the grounded theory research methodology, but questioned how does one get from substantive concepts in a graphical or outline format to expressing the theory in a

descriptive narrative? Searching for an answer to this question led the researcher to Glaser & Strauss' book *Awareness of Dying* (1965). In this work, which was researched using grounded theory methods, the descriptive narrative constitutes all but the concluding chapters of the book. The work proceeds by using "awareness contexts" such as "closed awareness", where the dying patient doesn't know he is dying, or "open awareness" where the patient knows he is dying. The authors then write about the various structural conditions of each context and the strategies employed to deal with each context and the set of conditions as well as the various consequences of selected strategies.

At this point, the researcher thought he was prepared to proceed with the study and did so. But, two hundred pages into the study and as yet, no story even started. The researcher had already visualized long rich descriptions of the various contexts, structural conditions, and formalized strategies for handling a number of contexts that exist in the development of workplace literacy programs. He realized that, somewhere along the way, that grounded theory process had eclipsed his original intent of using the *story* technique as the major component of his thesis. The innumerable coded categories; mountains of "memos"; piles of documents, transcripts, tapes, observation notes; dozens of charts, graphs, tables, and matrices

represented an important process. The researcher realized, that with this research, a definitive analytical tool had been expressed in his study-- that of a process whereby practitioners in the field of workplace literacy could analyze their situation, describe the context, and formulate strategies for developing their program.

For example, the process of *memoing* (a form of code notes) produced the following examples:

2/2/93

MEMO 2

Thinking about the Contents of the Dissertation

Obviously the **CORE** category is going to be "Workplace literacy". I must brainstorm what the major categories might be.

All of the steps must be under consideration and from that any peripheral or subcategories will emerge from the interviews.

Let's ignore some of the sequentiality of the steps for the moment.

If workplace literacy is the **goal** of the program, then there must be a linkage to the **problem** in a specific local way. This implies some sort of **NEEDS ANALYSIS** must be conducted. This does not preclude a centralized response. If the results of several or many local needs analyses show a **common** literacy need, then perhaps a common response could be developed. The problem with this is the conflict with the use of the local setting in terms of instruction. Research shows that the closer the **learning for work** simulates or duplicates the work environment, the better that learning contributes to improved work performance. If the purpose of the workplace literacy program is improved job performance, that means all

other factors such as better reading, improved home life, development of study habits, more effective participation in the political process, etc. are secondary, tertiary, or at least not primary reasons for the program. What about all the **factors of the workplace** other than effective performance of the current job?

-promotion

-retention of one's job

-advancement on the job

-prestige needs/recognition

-more pay

-assisting other team members' performance

-certification/qualification

-required by the employer

-release from job duties to attend classes instead of working

-love of learning new information

-group pressure to participate in a learning program

-others?

Let's continue with the brainstorming of categories.

-needs analysis

-planning the program

-funding

-buy-in from employer/managers

-development of the program

-implementation

-design of the program

-evaluation

-assessment of workers

-instructional practices

-counseling

-direct benefits to the business

-future qualifications/emerging technologies

Let's change the subject for a moment. In the development of robotics and manufacturing curricula during the 80s, the programs were developed by a task analysis procedure that seemed to ignore the trade lines controlling who did what work. The task analysis was constructed from rational considerations of what was required to install, program, maintain, and repair robots without considering what work group would be doing particular phases of the work. This illustrates what can happen if curricular development for the workplace takes place **outside** of the context of that work environment. Much of the curriculum had no relevance to many workers because they would never perform many of the tasks included in the total curriculum. Certainly motivation issues are involved here. Additionally, students of robotics programs who graduated or completed the program could not find jobs that matched the "academic" instruction. I mention this because the same type of situation could occur with "workplace literacy programs" if they are not developed according the local needs. The "fit" may not be appropriate. The "fall-out" from students

attending programs that don't fit their stated purpose can quickly spread out among the workers and participation will cease. Only if the program "fits" and participants see benefits from attending the program, will it be successful.

2/4/93

MEMO 4

INTEGRATION?

Is integration the central theme of successful workplace literacy program interventions? Integration: To make whole or complete by adding or bringing together parts. In other words, something is not complete unless all components or parts are somehow considered within its concept or substantive purposes.

Let's brainstorm the beginnings of a "integrated"workplace literacy program.

-workplace

-worker

-literacy

These three terms are abstract concepts that don't tell us much about a particular situation. They are useful, but difficult to use in an applied sense.

Many questions emerge about each of these words-

What kind of workplace? small? large? educated? blue collar? white collar?

Services? manufacturing? education? In a sense we are caught up in a definitional morass. We are in the situation somewhat akin to the statistician who has thousands of individual values of a variable from a population and is trying to make sense out of the information. The

statistician begins by grouping similiar values into a category or grouping of values. Thus come terms like mean, mode, and median. Much individual information is lost, but at least, perhaps the information can be comprehended using the more general or abstract definition of the data. In workplace literacy programs and the descriptors used to discuss such programs, we are in a situation similiar to the statistician. If we proceed from formal theory in a deductive mode, we are liable to omit many of the substantive variables in order to make a good fit of what we see to be our formal theory. If we proceed inductively from specific interactions and incidents, we may not be able to reconcile all of the incidents into a useful theory applicable to our situation or other situations. We may be unable to group or organize the facts (incidents) into any type of coherent system that allows us to function. Glaser & Strauss solve this problem in "Awareness of Dying" finding a context that allows for development of a "integrated substantive theory." The context in this case, is "awareness concepts." Can I use the concept of "integration" as the central theme in the study?

Let's discuss this issue further for elaboration. If integration is a key concept, then we would expect a theory that encompasses integration to be sound, if components are not integrated, we would expect theoretical as well as substantive problems. If we are considering the workplace in terms of literacy problems, then training must address those specific problems, not something unrelated, such as equipment, environment, or a reward system that discourages good performance.

Let's work backwards. If we say that our goal is literacy levels among our workforce that allow them to learn and perform their jobs then we must know about the jobs and about the current literacy of the employee before we can achieve this goal. Otherwise we do not know what the desired state is nor where the employees' literacy level is in relation the desired state. Can we develop instruction that is focused on our literacy needs without directly identifying those literacy needs? The answer is no. This means we must do a literacy task analysis of our jobs. Which leads to us having to do a job task analysis to find the particular job competencies expected of our workers. Once we know the actual job requirements of our various jobs, is this what we train to? Perhaps. But what if most of our workforce is competent? Do we still deliver instruction covering the entire realm of job competencies? Very expensive and potentially frustrating to competent workers. So we must identify our actual worker competence--worker-by-worker or at least using a representative sampling scheme.

What instruction do we deliver? If we focus our efforts, it has to address our **specific** literacy needs. This of course affects who our learners are, how much space we need, how much time, how much money, and our methods of instruction, and our methods of monitoring and evaluation.

Discussion about the scope of the literacy instruction in relation to the integration to specific identified employee needs: If preliminary investigation indicates that there is a wide-spread problem with literacy among the work force, then one probably should consider development of instructional solutions to address each and every job competency within the target population of workers.

In a large company that is reducing its hierachical structure and moving responsibilities downward in the organization, it would be advisable to address instruction to all job competencies, as sooner or later, the lower-level workforce will be expected to take over duties formerly performed by employees further up in the organization who were originally hired and trained to perform the tasks in question. Size of company is going to be an important variable in how the instructional program will be developed.

Reflections- Continued

It is possible that the analytical tools expressed in this study overshadow the findings, and may be more useful than the resulting *story*. So the researcher will leave, reluctantly, some contextual portions of the rich, varied, and descriptive narrative as visualized to the next doctoral student or researcher so intellectually inclined.

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APPENDIX A

Letter to Potential Interviewees

April 15, 1993

Dear :

I am currently engaged in a qualitative study with the purpose of developing a workplace literacy program model. This study is being conducted as a partial fulfillment of the requirements for the degree of Doctor of Philosophy in Curriculum and Instruction, Department of Teacher Education at Michigan State University under the guidance of Dr. Lois Bader and Gloria Kielbaso.

You have been identified as a person who might contribute your knowledge to the development of this workplace literacy model. I will be contacting you by phone in the near future to ask for a personal interview of approximately one hour.

To insure accuracy, I will request your permission to audiotape the interview by signing a consent form.

Sincerely,

Carl J. Hultquist
Doctoral Candidate

cc: Dr. Lois Bader
Dr. Gloria Kielbaso

APPENDIX B

Interview Consent Form

CONSENT FORM

I agree to participate in the study "The Development of an Integrated Workplace Literacy Model." I agree to the interview being audiotaped and transcribed. I understand the information will be recorded and used in a manner consistent with my expressed requests.

Please check your preference for use of the data from this interview:

( ) You may use my name in citations referring to data received during the interview and used in this study.

( ) I prefer to remain an anonymous contributor to this study. Do not cite my name as a contributor to this study.

Name_____ Date of Interview_____

APPENDIX C

Letter to Potential Expert Reviewers

Dear

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Dear :

I am a doctoral student at Michigan State University and for the past year, I have been researching workplace literacy programs and the various contributing factors leading to their success.

This research is in fulfillment of the dissertation requirements for Doctor of Philosophy in Curriculum and Instruction in the Department of Teacher Education at Michigan State University. I am working under the guidance of Dr. Lois Bader and Dr. Gloria Kielbaso.

I am in the final stages of the dissertation, and the methodology calls for the expert review of the proposed workplace literacy model. You have been identified as an expert in the area of workplace literacy and I am asking for your review of this model in terms of its completeness, explanatory power, and its practical use in the development of workplace literacy program.

I have included a draft of the model and its various phases for your review.

I would greatly appreciate any input and suggestions for improvement. If you require additional information or want to discuss the model, please call me at (313) 238-2414 or you may FAX input to me at this same number.

Again, thank you for your assistance.

Carl J. Hultquist
Doctoral Candidate
602 S. Franklin Avenue
Flint, MI 48503

APPENDIX D

List of Interviewees With Citation Consent

List of Interviewees with Citation Consent

Nancy Benjamen, Assessment Specialist
Certified Counselor

Craig Harrington, Systems Analyst, Computer-Based Training

Mary Carter, President of Learning Designs, Inc.

Larry Holliday, Training Consultant
Counseling Program Advisor

APPENDIX E

Interview Guides

Interview Guide

Systems Analyst

The purpose of this interview is to gain substantive knowledge of the applications of computers in the design and delivery of workplace literacy programs as perceived by the interviewee.

1. Please describe your experience with computers and their application in attempts to improve workplace literacy.

2. What do you feel, if any, are the appropriate applications of computers in terms of workplace literacy?

3. What do you feel, if any, are inappropriate applications to workplace literacy instruction?

4. At what point in the instructional planning process should the application of computers and computerized instruction be considered?

5. Are there any software applications available for workplace literacy instruction?

6. What criteria do you feel is important in judging whether a particular computerized instructional software is suitable for workplace literacy instruction?

7. What are some of the sources of information for workplace literacy program planners to use when considering computerized applications that deal with workplace literacy?

Interview Guide

Assessment Specialist

The purpose of this interview is to gain substantive knowledge of assessment and its appropriate design and use in workplace literacy programs.

1. Please describe your experience with assessment as used in workplace literacy programs.

2. Would you define assessment as used in workplace literacy programs.

3. At what stage in the workplace literacy program development does assessment design take place?

4. What are some appropriate designs for assessment in workplace literacy programs?

Inappropriate designs?

5. What are the steps in developing assessment instruments for workplace literacy?

6. When should assessment take place in workplace literacy programs?

7. What is the role of computers in the assessment process?
Is their any computerized assessment programs available for workplace literacy programs?

What are the evaluative criteria for choosing a computerized assessment tool?

8. What are the controversial issues about assessment in workplace literacy programs?

9. What is the role of standardized testing in workplace literacy programs?

11. Are there any other issues regarding assessment in regards to workplace literacy programs that you feel are important?

12. Any general comments about assessment and workplace literacy that you feel are important that have not been discussed?

Interview Guide

Curriculum Designer

The purpose of this interview is to gain substantive knowledge in the special considerations needed for curriculum design of workplace literacy programs.

1. Please describe your experience in curriculum design in general and in specific to design of workplace literacy curriculum.

2. What are the planning steps in the design of curriculum to be used in workplace literacy programs?

3. What specific information is needed for design of workplace literacy programs?

4. What are the particular curricular and/or learning theories that you feel would contribute to the development of workplace literacy programs?

5. Who needs to contribute to the curriculum design effort?

What are the specific inputs to the design and development process?

6. What are the controversial issues regarding curriculum design for workplace literacy programs?

7. Any general comments that you feel are important regarding the design of workplace literacy curriculum that we have not discussed?

Interview Guide

Counseling Services for Workplace Literacy Programs

The purpose of this interview is to gain knowledge about the substantive practices of counseling services in workplace literacy programs.

1. Describe your experience with counseling services in relation to workplace literacy programs.

2. What is the role of counseling in workplace literacy programs?

3. At what point in the program planning process are the counseling services planned?

What are the inputs to this planning process?

4. What are the critical points for delivery of counseling services in workplace literacy training?

5. What are the steps in determination of counseling needs for workplace literacy programs?

6. How can the effects of counseling in workplace literacy programs be evaluated?

7. What do you view as the controversial issues of counseling services for workplace literacy programs?

8. What impact do you feel the 1988 Amendments to the Federal Adult Education Act has played in the delivery of counseling services in workplace literacy programs?

9. What are the sources of information about counseling services for workplace literacy programs?

10. Are there other issues and questions regarding counseling services for workplace literacy that we have not discussed?