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ABSTRACT

This publication reports the proceedings of a national symposium that examined from several perspectives the application of occupational adaptability and transferable skills in preparing individuals for tomorrow's careers. Five presentations made up the symposium. Jerry Short spoke on New and Changing Occupations: Jobs and Skills for Tomorrow and offered strategies for teaching adaptability that could assist individuals in becoming adaptable. Speaking on An Employer's Concern with Occupational Adaptability, Richard Peterson stated that both employers and workers must become aware of the transferability of skills as opposed to job specificity in successfully preparing themselves and others for a lifetime of work. Paul Barton's presentation on The Early Youth Employment Experience examined labor market data to show a relationship between education and work. Application of the concepts of transferable skills and occupational adaptability were examined and questioned. Judy Springer gave a status report on training in Business and Industry. In his presentation on Occupational Adaptability and Transferable Skills: Synthesis and Reaction, George Copa reviewed major issues discussed by the other symposium presenters. (LRA)

Information Series No. 189

OCCUPATIONAL ADAPTABILITY:

PERSPECTIVES ON TOMORROW'S CAREERS

A SYMPOSIUM

Compiled by

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The National Center for Research in Vocational Education
The Ohio State University
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THE NATIONAL CENTER MISSION STATEMENT

The National Center for Research in Vocational Education's mission is to increase the ability of diverse agencies, institutions, and organizations to solve educational problems relating to individual career planning, preparation, and progression. The National Center fulfills its mission by:

- Generating knowledge through research
- Developing educational programs and products
- Evaluating individual program needs and outcomes
- Installing educational programs and products
- Operating information systems and services
- Conducting leadership development and training programs

The project presented or reported herein was performed pursuant to a grant from the National Institute of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the National Institute of Education should be inferred.

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

National Institute
of Education

FOREWORD

The National Center for Research in Vocational Education is continuing its programmatic research into occupational adaptability and transferable skills. The publication reports the proceedings of a national symposium that examines, from several perspectives, the application of occupational adaptability and transferable skills in preparing individuals for tomorrow's careers. The symposium was one of several efforts conducted within this research project to gain a better understanding of the needs and abilities of individuals in applying various skills in a variety of life and work situations.

Conducted by the National Center's Transferable Skills Program and sponsored by the National Institute of Education, the symposium took place on December 6, 1978, at the American Vocational Association's annual convention in Dallas, Texas. The symposium presenters—from industry, business, education, and research—chose to focus on how training for adaptability can increase the use of human resources in the labor force and illustrated the logical and intuitive appeal of these notions.

The opinions expressed in the symposium presentations are those of the presenters and do not necessarily reflect the opinions or perspectives of the Transferable Skills program, the National Center, or the National Institute of Education.

The National Center wishes to express its appreciation to the four symposium presenters:

- Paul Barton, The National Manpower Institute; Washington, D.C.
- George Copa, The University of Minneapolis; Minneapolis, Minnesota
- Richard Peterson, AT&T; Basking Ridge, New Jersey
- Jerry Short, The University of Virginia; Charlottesville, Virginia
- Judy Springer, The Athena Corporation; Bethesda, Maryland

The planning, coordination, and editing of the symposium was shared by William Ashley, Nancy Laitman-Ashley, and Connie Faddis. Our thanks, also, to the American Vocational Association for its assistance in accommodating the symposium at its annual convention. The valuable advice of Robert Stump, Project Officer from the National Institute of Education, is acknowledged. The symposium was produced under the supervision of Frank Pratzner, Program Director of the Transferable Skills program at the National Center.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

EXECUTIVE SUMMARY

The results of this symposium have added a broad range of new knowledge to what the Transferable Skills program at the National Center for Research in Vocational Education has conceived as the nature, implications, and applications of transferable skills and occupational adaptability. As represented by the symposium presenters, the concepts and value of transferable skills and occupational adaptability appear to have logical and intuitive credibility to a broad audience of interested parties.

Occupational Adaptability and Education/Training

In his view of occupational adaptability, Jerry Short offers strategies for teaching adaptability that could represent avenues by which different people may become adaptable. Short sees problem solving basic to occupational adaptability, especially in the abilities to identify problems and generate alternative solutions. He recommends teaching strategies so that students will be provided with additional experiences in practicing skills in different situations. Because styles of learning differ, Short believes that individuals will learn better and perceive adaptability in different ways if they are exposed to a variety of work situations.

A message in Judy Springer's presentation echoes that in Short's. She believes that options can be expanded through helping individuals to take greater responsibility in the use of their learning styles and problem-solving capabilities. The teaching of transferable skills and occupational adaptability will require educators and trainers to attend to styles of learning in order to maximize learning, transfer, and performance.

George Copa believes that an individual's specific vocational preparation should be based on his or her talents and "motivated skills." The general education should focus on problem-solving and decision-making capabilities. If these were developed to an acceptable level of competency, the specific vocational preparation later in school might be facilitated and the success of transfer of skills to and within appropriate occupational clusters for individuals should be enhanced.

Transferable Skills, Occupational Adaptability, and Work

Paul Barton's presentation dealt with labor market data (primarily in what he termed the "youth labor market") to explore the relationships between education and work. Application of the concepts of transferable skills and occupational adaptability were examined and questioned. Barton pointed out that general and vocational education programs tend to be designed to meet needs of the labor market, but the realities don't always fit the popular models; there are many "labor markets," not merely one gigantic pool.

Another problem Barton dealt with in the link between vocational preparation and work is that most youth work experience delays skill transfer until later, when the persons enter the "adult labor market." Most youth are employed in jobs that Barton claims use few skills (such as retail sales, the fast-food industry, or low-level finance and clerical work), and provide few career ladders and promotional opportunities. Generally, not until youths have passed age 20 will they obtain adult-level entry positions.

Richard Peterson, a manager in specialized training for AT&T, said that employers *are* concerned about workers transferring their skills, and adapting in the work settings. Companies are attempting to maximize the use of human resources through improved transfer of skills and adaptive behaviors. An example was Peterson's discussion of AT&T's efforts in developing generalizable skills training for managers at and across various levels. Springer also implied that some employers are making headway in maximizing transfer of skills in industrial training programs, but the efforts have so far been limited in success and scope, and have not been widely reported.

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INTRODUCTION

Issues

Many Americans today face a complex and dynamic world of social, economic, and technological change. The family, school, church, and government all reflect the dynamic character of life. But none seems to be affected more than the world of work. Most Americans spend a large portion of their lives engaged in some sort of work. They identify strongly with their work affiliations and even their leisure time revolves around and is limited by their work.

Due to the dynamic nature of this advanced industrialized society, work tasks, expectations, and values of job holders continue to change as do the demands and contexts in which they perform them. Not only are jobs changing, but people are also changing their jobs and occupations. Occupational mobility—any move from one occupation to another—is becoming the rule for many people in the American labor force. On the average, one-third of all American workers change their occupations over a five-year period. For example, only 47 percent of men and 40 percent of women with occupations in 1965 had the same occupation five years later.[1]

It is in the area of job mobility that two concepts are paramount: occupational adaptability and transferable skills. Occupational adaptability might be defined as the capacity of people to adapt to an environment and/or adapt the environment to themselves. Basic to occupational adaptability is the ability to transfer skills to different situations. In the world of work, transferable skills are often described as "the skills and abilities which an individual brings with them from job to job, and which apply to each job."[2]

A symposium conducted by the National Center for Research in Vocational Education at the Ohio State University, and sponsored by the National Institute of Education, took place on December 6, 1978 at the American Vocational Association's Annual Convention in Dallas, Texas. This symposium examined, from several perspectives, the validity and utility of occupational adaptability and transferable skills in the world of work. Four specific objectives under this general topic were addressed:

- To expand and clarify the meaning of occupational adaptability and transferable skills;
- To focus on factors that affect these concepts;
- To identify and illustrate the utility of these concepts for individuals;
- To explore directions for further research in these areas.

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[1] Sommers, D., and Eck, A. "Occupational mobility in the American labor force." *Monthly Labor Review*, January 1977.

[2] Pratzner, F.C. *Occupational Adaptability and Transferable Skills* (Info. Series No. 129). Columbus, Ohio: Ohio State University, National Center for Research in Vocational Education, 1977:(22-25).

Format

The symposium probed issues of occupational adaptability from a number of related perspectives. Five presentations made up this symposium:

- Jerry Short (presenter) spoke on "New and Changing Occupations: Jobs and Skills for Tomorrow." In his presentation, Dr. Short offered strategies for teaching adaptability that could assist individuals in becoming adaptable.

- Richard Peterson (presenter) spoke on "An Employer's Concern with Occupational Adaptability." Dr. Peterson stated that both employers and workers must become aware of the transferability of skills as opposed to job specificity in successfully preparing themselves and others for a lifetime of work.

- Paul Barton (presenter) spoke on "The Early Youth Employment System." Barton's presentation dealt with labor market data to show a relationship between education and work. Application of the concepts of transferable skills and occupational adaptability were examined and questioned.

- Judy Springer (presenter) gave a status report on "Training in Business and Industry." In her presentation, Springer stated that some employers are making headway in maximizing transfer of skills in industrial training programs. She also suggested that options can be expanded through helping individuals to expand and take greater responsibility in the use of their learning styles and problem-solving capabilities.

- George Copa (presenter) spoke on "Occupational Adaptability and Transferable Skills: Synthesis and Reaction." In his presentation, Dr. Copa reviewed major issues discussed by the other symposium presenters.

Each of the presenters addressed a major topic area that might expand and clarify the meaning of occupational adaptability and transferable skills. Many of the symposium presenters stressed applying the concepts of occupational adaptability and skill transfer to real life experiences for greater public acceptance. As one presenter succinctly stated, "Let's get it out there into the real world and get it working on everyday problems. Experience will be the best motivator for acceptance, and will lead to even more experience. In other words, 'Try it—you'll like it.' "

NEW AND CHANGING OCCUPATIONS:

JOBS AND SKILLS FOR TOMORROW

Jerry Short

University of Virginia
Charlottesville, Virginia

Jerry Short is Chairman of the Foundations of Education Department and Associate Dean of the School of Medicine at the University of Virginia. He has conducted recent studies of the transferable skills for the American Telephone and Telegraph Company that focused on differences in skills required for learning tasks in school settings and in job settings. As a consultant to the Southeast Asian Regional Center for Educational Innovation and Technology, he has studied transferable skills required of teachers and other school personnel who manage innovative educational programs.

NEW AND CHANGING OCCUPATIONS: JOBS AND SKILLS FOR TOMORROW

Jerry Short
University of Virginia

Education and Adaptability

In 1899, William James described an uneducated person as someone who is "nonplussed by all but the most habitual situation." In contrast, he said, an educated person is one who is "able practically to extricate himself by means of the examples with which his memory is stored ... from circumstances in which he was never placed before." (James, 1899, p. 29)

In the same book, James illustrated the distinction between an educated and uneducated person with a story about the failure of a school to teach students to respond to new circumstances, even when a new circumstance was only slightly different from an old one:

> A friend of mine, visiting a school, was asked to examine a young class in geography. Glancing at the book, she said, "Suppose you should dig a hole in the ground, hundreds of feet deep, how should you find it at the bottom —warmer or colder than on top?" None of the class replying, the teacher said, "I'm sure they know, but I think you don't ask the question quite rightly. Let me try." So, taking the book, she said: "In what condition is the interior of the globe?" and received the immediate answer from half the class at once: "The interior of the globe is in a condition of igneous fusion."
> (James, 1899, p. 50)

There is a striking similarity between James' concept of an educated person and our current concept of occupational adaptability. When adaptable people find themselves in a new situation, they can quickly identify the new problems that need to be solved, generate alternate solutions to the problems, test these new solutions, and learn new appropriate responses. In doing this, adaptable people set up new consequences that reward them in the new situation. In contrast, nonadaptable people are unable to act in a new situation or can only resort to habitual responses that have been successful in the past. Nonadaptable people think in circles, fail to recognize that the new situation presents new problems, and therefore do not attempt to generate new solutions and learn new actions. Because the old habitual acts seldom succeed in the new situation, nonadaptable people receive no positive consequences in the new situation, and tend to become depressed and unproductive.

Adaptability and One Scenario of the Future

Imagine for a moment your own level of adaptability if you were suddenly shipwrecked on a desert island. One scenario of the future is not too different from this: the scenario that predicts

a nuclear holocaust and a consequent return to a primitive society. In such a scenario, would you have the adaptability to survive? Has the education you received taught you skills that would transfer to this new situation?

For example, did your biology courses prepare you to identify the difference between edible and poisonous plants? Did your geography and physics courses teach you how to find drinking water or how to convert salt water to fresh water? Did your education in history, art, music, and literature prepare you to fill vast, empty hours with activities that you would find stimulating, creative, and pleasant without access to books, television, or movies? Did your courses in psychology, human relations, and philosophy prepare you to withstand the rigors of the climate, the insects, and the other problems of living in a world without technological conveniences?

For most of us today, this scenario of the future probably represents the most demanding change in circumstances, requiring us to be ultimately adaptable in order to survive. But there are other visions of the future, more hopeful and optimistic ones, that may require almost as great a level of adaptability.

Adaptability Today: From School to Work

In 1974, we conducted a series of studies (Short, Dotts, Short, & Bradley, 1974) for the American Telephone & Telegraph Company that have some bearing on the issue of adaptability for the future. In these studies, we interviewed a number of new employees of the Bell System who were beginning their work careers. We observed them at work and also talked to them about the contrast between their schools and their jobs. For our context here, it is useful to think of schools, as they now exist, as representing the past; and current jobs as representing the future. I believe that by examining some of the results of these studies, we can project the current discrepancy between what schools teach and what jobs require, into the future—where jobs will make even greater demands on an individual's adaptive skills. Two examples of our findings, Reading and Math, will serve to illustrate the types of discrepancies we found.

Reading. New employees frequently commented on the great difference in reading in school and on the job. In school, they said, they read primarily in order to be able to answer a written question related to the reading. In a sense, the purpose of reading in school was to find an answer to write. In contrast, they found that most of the things they were required to read on the job were supposed to change their actual behavior. Training and job instructions were read in order to find out how to do a job, not in order to identify a correct passage to paraphrase, or to select the right multiple-choice answer.

The students noted that there had been very few situations in school where they were required to read in order to alter their own behavior. A few of them even noted that one of the functions of school seemed to be to make reading for this purpose unnecessary. For example, math classes in school were specifically designed to help students avoid learning how to work problems by reading instructions. The employees said most math teachers demonstrated how new problems were worked rather than let the class learn this by reading the math textbook.

(The same point was made by my nine-year-old son, John. He came home one day, indignant about his math homework assignment. He wanted help because he didn't know how to do the problems. I agreed to help and looked in his math textbook. On the same page as the homework assignment was a beautiful description of how to work the problems and two completed and annotated examples. I pointed these out to John. He replied, "Daddy, don't you know that you don't learn how to do math by reading a book? The teacher shows you how to do math problems. Now show me.")

In the project, we used a simulated task to study the way reading skills are used on jobs. In the simulation, employees were asked to read the job information material shown in Figure 1 and use it to direct their own behavior in a simulated job task involving answering questions from voters. The voters' questions and conversations were tape-recorded and the employees had to use the information that they read in order to talk with the voters. A sample of a conversation is shown in Figure 2. I think the experience of using written instructions to control one's own behavior under a variety of new situations clearly illustrates the high level of adaptability needed to use reading skills even in a simple simulated job task.

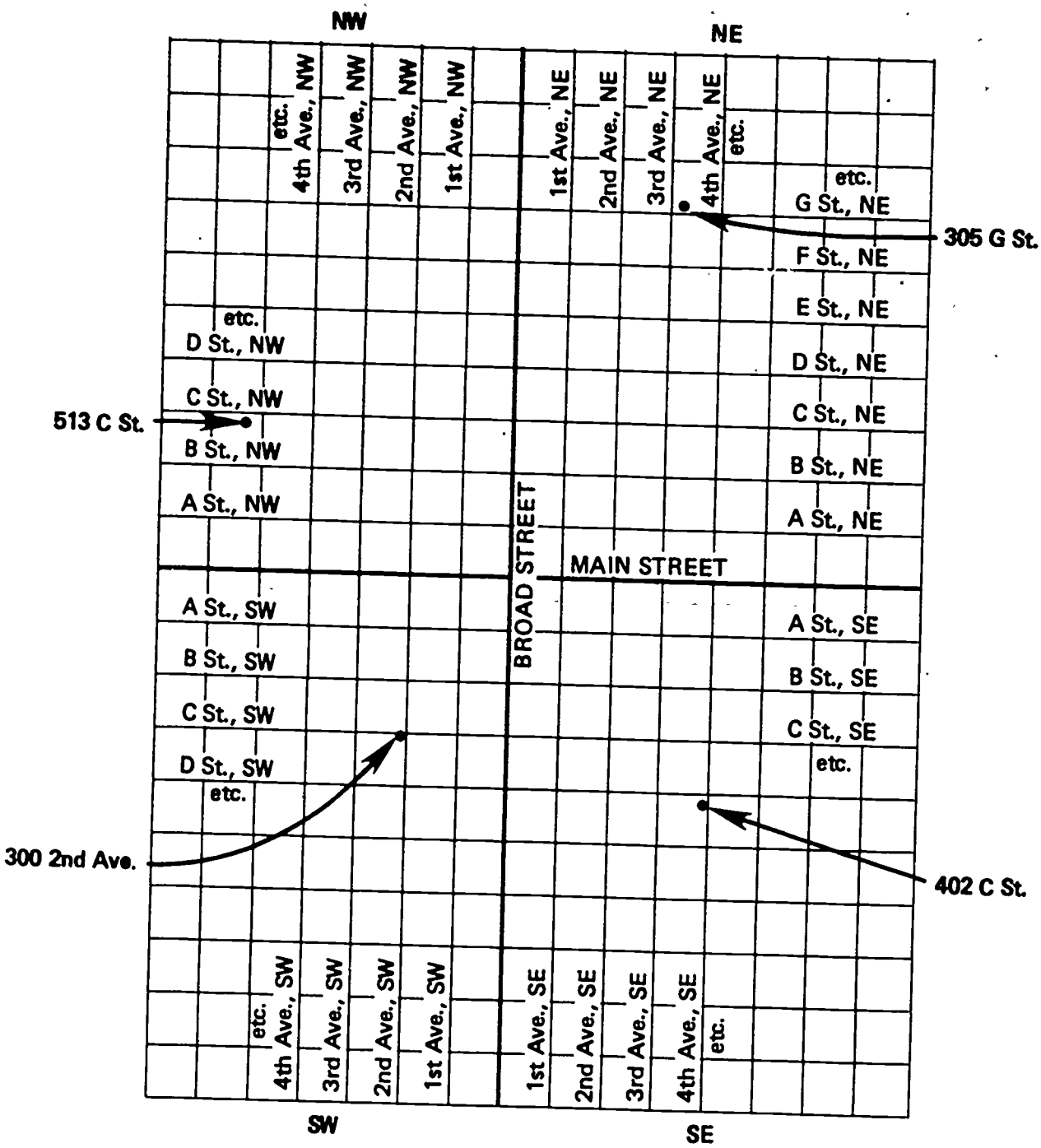
Math. The employees also noted a great discrepancy between the way math skills are used on a job and the way they are used in school. In school, math problems are always in a book with all the information conveniently arranged in a brief paragraph. However, on the job, the problem is never so neatly defined. In one particular job, the variables of a math problem came from customers, from manuals of rates and policies, from computer displays, from training materials, and from consultation with supervisors. The problem was not neatly presented in one place; it was fleeting and time-dependent. Much of the information, such as data from a customer's conversation, would quickly disappear unless the employee made some systematic record of the information as it was presented. A computer readout would disappear, the customer's voice would disappear, the supervisor's attention would disappear. All of these quickly fading stimuli made up part of the problem.

There is another way in which math problems presented by a job are different from those presented in school. This is in the amount of irrelevant information, or "noise," contained in the problem statement. All of the information in a math textbook problem is relevant and must be used to solve the problem. On the job, though, there is a great amount of irrelevant information presented with the problem. In order to identify the problem, the employee must be able to screen out the irrelevant information and ignore it. In many jobs in the future, we will need to be able to filter out the irrelevant information in solving current problems, rather than try to attend to everything and misconstrue the problem. This ability to filter out unneeded information is probably a critical aspect of adaptability, especially as jobs come to involve more information processing, and employees are required to deal with more and more complex situations.

In summary, the math problems created by job situations often require no more than basic addition, subtraction, division, and multiplication skills, once the problems have been identified. But the nature of the problems—the fact that they are spread over time, disorganized, and full of irrelevant materials—involves organizing information and conceptualizing the problem, a skill very different from solving the problems that are already neatly organized for students in a math textbook or test.

Three Scenarios for the Future

There seem to be at least three possible scenarios for the future of careers and jobs. One is a return to a more primitive society following some kind of environmental holocaust or nuclear war. The second projects increasing complexity of jobs, increasing demands on human problem-solving skills, and increasing freedom within the job market for adaptable people to move back and forth among jobs and to shift to new jobs when old ones become obsolete. The third scenario is a model of rigidity and guild-like protectionism in which people who currently hold jobs set up prerequisites and professional accrediting requirements that make it almost impossible for people who have not devoted their entire life to a particular job or career to get into it.



• indicates voting places

Figure 1. Reading materials designed to alter employee's job behavior

Tape Recorder:	Your phone is ringing. Answer it. (pause)
Service Representative:	Good morning. Voting Information Center. I'm Miss Jones. May I help you?
Tape Recorder:	Yes, I'd like to get some information about voting. (pause)
Service Representative:	I'd be glad to help. Have you voted in the city before?
Tape Recorder:	Yes, but I forget where I went to vote last year. (pause)
Service Representative:	Where do you live?
Tape Recorder:	My address is 1430 K Street. (pause)
Service Representative:	Which section of town is that?
Tape Recorder:	Oh. K Street Northwest. (pause)
Service Representative:	Then you vote at 513 C Street Northwest.
Tape Recorder:	O.K. I go to 315 E Street. (pause)
Service Representative:	No, 513 C Street. C as in Carol. 513 C Street.
Tape Recorder:	Oh, 513 C Street Northwest. (pause)
Service Representative:	That's right.
Tape Recorder:	Thank you very much. (pause)
Service Representative:	Thank you.

Figure 2. Example of the use of reading materials in a simulated job setting.

There are data to suggest that both the second and third scenarios, although opposites, are both major trends today. Manpower studies show that about eight percent of the work force change occupations each year and have done so at this same rate for the last 15 years. Yet most of this change occurs in the younger part of the work force, with workers who have held jobs a short period of time and at lower levels of occupational training (Byrne, 1975).

A great deal has been written about older executives and workers changing careers as the stages of their lives change (e.g., Sheehy, 1976) or as their current positions become obsolete or oversupplied. These data suggest a future of significant job mobility. On the other hand, there are other indicators that careers are becoming more specialized, with more rigid barriers between them. For example, fifty years ago, a teacher was assumed to be qualified to teach any subject matter to children of any age. Today, in most states, the teaching profession is so highly compartmentalized that a high school physics teacher is not, without additional education and certification, allowed to teach high school math or other related sciences.

A Fourth Scenario of the Future: The Developmental Stages of Individuals

There is one other scenario of the future, one that is based on our growing awareness that the problems that concern us at one age are different from those that concern us at another age (Sheehy, 1976). According to this view, as we grow older we face a predictable series of new concerns and new challenges. For example, in our twenties, we are concerned with questions such as:

How can I be independent of my parents?
How do I find someone with whom to share my life?
What should be my career and life work?

In the late twenties and early thirties, other concerns become dominant:

How do I "make it" materially?
How do I care for my children?
Do other people approve of me?

In the forties and fifties, our concerns seem to change again:

Why do I feel stagnant and depressed?
Is this all there is to life?
How can I be self-sufficient?

In the later years, our lives focus on still other questions:

Can I find other people to care for and serve?
Do I approve of myself?

Thus, within each person's own life, there seems to be a changing future, correlated with age and characterized by the changing problems that confront us as we grow older. If in no other way, the future, in this scenario, seems to demand that we adapt if we are to survive, succeed, and be able to look back on our lives with pleasure rather than despair.

Adaptability for the Four Scenarios of the Future

The interesting point about these four scenarios is that, regardless of which of the four ultimately matches the future, they all make similar demands for increased adaptability for survival and success. Even the future of increasingly rigid specialization makes these demands.

If we assume that the third scenario will occur, the growing amount of information and knowledge that is available in any specialized field will force the professional to adapt within the profession

in order to remain successful in it. Even in a narrow guild-like profession like psychology, where requirements of training and licensure are strict, it is impossible for the clinical psychologist to give the best service to his/her client without being able to analyze the problems of clients in the light of new therapies and new solutions to those problems.

In any of the four scenarios of the future, there seems to be a demand that a person learn, in a series of concrete experiences over a lifetime, that environments change and that behavior in response to those environments must also change if the person is to continue to function effectively. An authoritarian attitude about the rightness of our old way of doing something, or an intolerance to considering new solutions, is a guarantee of obsolescence.

Can Schools Teach Adaptability?

There is little about our current school system that seems to be geared to train for this kind of adaptability. Studies have found that the majority of teachers consider knowledge and truth to be fixed entities, and only five percent of teachers believe in relativism and the tentative nature of truth. The vast majority hold tightly to belief in the fixed nature of knowledge, distrust ambiguity, and do not want to tolerate complexity (Harvey, 1966). Similarly, many observational studies of classrooms have shown that most of the time, most teachers interact with students on a level of simple questions about simple facts, and reinforce nonadaptive repetition of these facts rather than adaptive ways of learning and thinking (Goodlad & Klein, 1974).

On the other hand, it may be that relatively small changes in school settings could produce larger changes in students' ability to adapt. The discrepancies in the ways reading and math are used in schools and on the job might be bridged by simulations of job tasks in schools, increased experiences in career education, and changes in the way math and reading tasks are structured in the school curriculum.

The Essential Requirement of Adaptability: Problem Solving

Perhaps the essential element of adaptability is some general problem-solving skill—not an abstract knowledge of problem-solving procedures, but a series of experiences in new situations where problems must be identified and new solutions must be tried in order for the person to be successful.

There are probably two key elements to such problem-solving. The first is the ability to identify the problem accurately by focusing on the critical dimensions of the situation and filtering out those dimensions that apparently do not make a difference. The other element of problem-solving skill that seems to be essential to adaptability is an ability to generate many solutions to a problem rather than to focus too quickly on the habitual solution.

The nonadaptable employee is the one who continues to apply old behaviors in new situations and who uses the same old solution as the only possible solution to the new problem. Mager and Pipe (1970) noted that educators are often guilty of this type of nonadaptive problem-solving: Many of them believe that the solution to any problem of human resources can be accomplished by another application of the training and education solution. Mager and Pipe described a number of non-training solutions that are more effective and efficient in solving many human problems.

Almost every problem has many possible solutions. A key aspect of successful problem-solving is a willingness to look for alternate solutions and an ability to generate and consider many such alternatives. Recently, in the *Harvard Business Review* (Blake, 1978), the vice president of Anderson Clayton & Co. described a business problem that will surely be a general problem of the future. The monthly report of his company's operation was produced in a hundred-page volume of computer printouts and charts. People within the company had learned to collect information, process it, and distribute it. But the problem for the company officers was how to use all this information. Alternate solutions were tried, but the one that is now being tested is somewhat unusual: The entire volume of data was reduced to a single page of graphs. Now, both a month's activity and a history of the company's operations over a five-year period can be illustrated on a single sheet of standard-size paper.

There seems to be little doubt that whatever the future holds, it holds problems. It seems evident that the effective person in this future will be the adaptive one who has the skill to identify the problems and to generate alternative solutions to them. The means by which we can teach ourselves and others to achieve this goal seem much less clear, but the guideline is surely to maximize people's opportunities to function adaptively in many new situations.

What to Do Next?

We already know a great deal about adaptability that we can apply. We can attempt to give students additional experiences in practicing skills in new situations. Some of these situations may be real ones; others might be simulations like the on-the-job reading experience illustrated earlier. Indeed, simulations seem to hold great promise in allowing people to experience the requirements for adaptability in situations that are safe, and where different strategies for coping with new situations can be tried and tested.

In this area, we need to continue to identify discrepancies between the way skills are used in old and new situations and to build simulations that adequately prepare people to adapt in the new situations. This will require a continuing effort to identify new situations that will make demands for adaptability. As these demands are identified, it should be possible to design effective simulations that will allow people to practice responding to a new situation and practice solving the problems presented by it.

A second line of action is to continue to identify cognitive strategies—ways of thinking and problem-solving—that aid adaptability. A few days ago I asked some students in a graduate seminar to describe some situations in their lives that had demanded that they adapt to a new situation. One student described an experience that happened when she first went to live overseas. She was in Munich, and on her first day there she attempted to board a streetcar by the front door. The driver closed the door in her face and shouted at her. She was upset and remembers the incident as a traumatic one. Then she decided to stand back and watch the natives of Munich board the next streetcar. She saw that they boarded by the rear door and exited by the front. She learned from this observation, and had no further difficulty with the public transportation system of Munich.

The incident is a small example of adaptability, but it probably contains an important cognitive strategy that can be summarized something like this: "When in a new and difficult situation, stand back and observe what 'experts' do in the situation." Although this particular cognitive strategy—this reminder of one way of solving problems—seems obvious in retrospect, there are probably many instances when this particular solution is ignored. By giving people the opportunity to practice this strategy in many situations, it might be possible to ensure that it would become a routine part of their style of problem-solving.

There are probably many other simple cognitive strategies, like the "observation" described above, that require practice before they become routine. And there are many to be discovered—perhaps by collecting additional anecdotes about critical incidents in which people adapted well to a new situation or failed to adapt. These strategies need to be tested empirically to see if they actually do improve our ability to cope with new situations. One especially promising cognitive strategy that students might use is an application of the nursery rhyme that begins:

Richman, poorman, beggarman, thief,
Doctor, lawyer, merchant, chief.

Using this strategy, students would ask themselves, "How could I use what I've just learned in the last class period if I were a richman, poorman, beggarman, thief? . . ." substituting for these positions other relevant careers. The repeated use of this question following every learning experience might be an important cognitive strategy for improving students' abilities to adapt to the future. It is a simple strategy, and one that seems worth testing.

Summary

1. The future, no matter which scenario it follows, will demand that we adapt in order to be successful, productive, and happy.
2. A major goal of parenting, teaching, and managing is to help our children, our students, our employees, and ourselves become more adaptive in the new situations the future will bring.
3. Simulations of situations that require adaptability and the use of general cognitive strategies that improve adaptability are two ways by which we might approach this major goal.
4. Research and development efforts should be aimed at (a) identifying simulation possibilities, (b) identifying cognitive strategies, and (c) testing these to determine those that are actually effective in improving adaptability. We could begin by attempting to apply the cognitive strategy suggested above: "How could I use what I've just read in the last few minutes if I were a richman, poorman, beggarman, thief, doctor, lawyer, merchant, chief, teacher, counselor, administrator, wife, husband, computer engineer, father, mother, citizen, lost on a desert island, retired, a caring human being. . . ."

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AN EMPLOYER'S CONCERN WITH OCCUPATIONAL ADAPTABILITY

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AN EMPLOYER'S CONCERN FOR OCCUPATIONAL ADAPTABILITY

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The intent of this paper is to discuss one employer's experiences, programs, and problems in dealing with some kinds of employee movement within the firm, and to relate them to the concepts of occupational adaptability and transferable skills. Although the employer—the Bell System—may not be typical of most American employers in size, geography, or primary function, Bell System jobs include a wide range of typical American occupations, and most of the problems and decisions relating to individual employee movement resemble those of other employers. Also, the activities and programs are large-scale versions of what might be appropriate for many smaller employers.

The paper is organized in the following sequence:

- The stage is set by highlighting the employee movement situation within the Bell System.
- Some past experience relevant to transferable skills is reviewed.
- Two specific problems relating to employee movement are described in detail, citing precipitating problems, facilitating concepts and methods, and solutions under development.
- The paper concludes with some comments on the value and potential role of occupational adaptability in an employer's total human resources management effort.

Setting the Stage

The Bell System would not be considered by many people as a typical American employer. It is unique in that it is an affiliation of 19 telephone companies, each operating in one or more of the 48 contiguous states, plus a 20th company that links their networks together. It includes a staff organization, a research laboratory, and a manufacturing company. It employs close to one million workers, with about one out of every four in a management job—including non-supervisory specialists and professionals. In 1977, it ranked fourth in the U.S. in revenues, and first in overall assets—double those of the second-ranked company (*Business Week*, 1978). Overall, it can be considered the largest corporation in the world and the largest employer after the federal government.

Within that context, the movement of people into and within the Bell System over the next five years or so is projected as follows:

- There will be virtually no change in total numbers of employees, although the distribution of where they are in level and in occupational specialty will shift. For example, an estimated 60,000 will be promoted from non-management to first-level management positions, and another 25,000 from first- to second-level

positions over the next five years. Also, in management, jobs in marketing and sales functions will almost double.

- To keep up with the internal movement and with the loss of employees through retirement, resignation, dismissal, leave of absence, and death, over 30,000 people will be hired into non-management jobs, and another 20,000 into management.
- Total training costs will approach one billion dollars a year.

Clearly, the requirements and consequences of employee movement into, within, and out of the Bell System is in itself "big business."

To complicate the situation further, here are some factors currently having an impact on the Bell System and the jobs of its employees:

- The largest corporate reorganization in history, according to the recent cover article in *Business Week* (1978), affecting one out of every three employees at all levels.
- An active Affirmative Action Program that has been helping the movement of women and minority employees into and within "non-traditional" areas of the business.
- Rapidly changing technology in communications and data systems, reaching into vast numbers of jobs at all levels.
- An anti-trust suit against the Bell System by the U.S. Department of Justice.
- Continually changing trends in employee attitudes, values, and behavior around such issues as job stress, job mobility, midlife career changes, and early retirement.

In the midst of all these "Gee Whiz!" facts and figures, the Bell System has become committed to a highly individualized approach to employee job changes, one that emphasizes guiding and assessing such employees much as smaller companies would do—through local managers and supervisors, and for one employee at a time. Therefore, although few employers have the range and magnitude of employee movement and occupational change that characterizes the Bell System, their problems and needs are similar and require similarly varied programs and solutions. Admittedly, the size of the Bell System provides a bigger base of support for research, development, and implementation of efforts to facilitate occupational transitions.

Some Relevant Experience and Previous Activities

AT&T, the headquarters organization for the Bell System, has long been involved in developing human resources technology and policy relevant to transferable skills. For example:

- Development and validation of a battery of entry-level qualifying tests to determine the level of an applicant's skill or ability required for available entry-level jobs (Grant & Bray, 1970).
- Development and validation of assessment center techniques to determine developed abilities, potentials, strengths, weaknesses, and perhaps motivation, usually of managers. Typical "dimensions" evaluated include such transferable skills as oral communications skills, planning and organizing ability, and flexibility (Bray, 1976).

- Development of techniques for designing training that is firmly grounded on the required skills of the job or occupation, some of which may be common to several jobs or occupations within the craft or discipline (AT&T Training Research Group, 1975/76).

- Adaptation and wide use of task analysis techniques, including derivation of supporting skills and knowledges, many of which are expressed in terms of generalizable skills and knowledge (Peterson, 1973).

- Development of techniques for designing or redesigning jobs, which, for example, can be applied to realign skill demands in a group of jobs (Peterson & Duffany, 1976), or to establish a minimum skills profile for employability (Peterson & Jones, 1984).

It would be gratifying to report that all this experience and accumulated knowledge had been synthesized into a systematic career planning and management program. In fact, several of our telephone companies have developed career planning approaches for their own use, usually emphasizing the supervisor as the prime mover of any such approach. However, a standard Bell System program is just now beginning to be developed. It may not even be possible to develop a single program to fit the diversity of conditions and expectations within the Bell System.

The Bell System is not alone in its efforts to develop a uniform career planning program. A recent survey of 27 organizations reputed to be in the forefront of career development practices showed a trend toward more systematic career management systems among the 19 respondents, although few have extensive programs in effect, yet (Cohen, 1978). One of the conclusions of the study is that "skill banks and job postings should be tied in with career development" — a recognition of the potential value of identifying transferable skills and using them as an integral component of an employee movement system.

Many of the efforts cited in the study above seem to be seeking a set of core dimensions, whether they be generalizable skills within individuals or common requirements of jobs, so that processes could be developed and implemented for as wide an audience and range of field situations as possible. In the terminology of this symposium, businesses have been sensitive to the value of transferable skills for many years. For example, the process of management assessment has involved determining what generalizable skills contribute to effective management and how those skills could be identified in individuals.

Most employers could probably relate to the transferable skills concept, as indicated by a study (Wiant, 1977) conducted by the National Center for Research in Vocational Education, sponsor of this symposium. In a series of nine conferences with a wide range of employers, the project staff attempted to assess the usefulness of the concept of transferable skills, to identify such skills common to many employers, and to define problems in applying the transferable skills approach. Some highlights of that study are significant as background for other discussion:

- The subject of transferable skills is worthy of study and, if possible, of application by educators and employers.

- Even though "transferable skill" was not defined, the conferees were in considerable agreement on what some of them were (e.g., communicating, working with others, problem-solving, and analyzing/assessing).

- Such skills appeared "useful or necessary in an almost limitless array of life and work situations" (Wiant, 1977, p. 3).

- The relationship between occupational mobility and transferable skills is still unknown, since so many other factors prevail.
- Problems in identifying and measuring transferable skills form a major barrier to applying the concept in employee selection and movement, including the problems of reliably assessing the presence of such skills in individuals, and the difficulties in determining the valid requirement for the skills in specific jobs and tasks.

Thus, it is not only the Bell System that finds the basic concept useful in its role as an employer. It is clear that the fundamental concepts of generalizable or transferable skills are practical enough to be recognized by most employers and to be incorporated into basic human resources management methods, although not without some difficulty.

The next sections discuss two major Bell System needs in the area of employee movement: the development of generalizable management skills, and career movement from non-technical to technical jobs. They will also relate the application of transferable skills and occupational adaptability concepts in programs responsive to those needs.

Development of Generalizable Management Skills

There is a great deal of literature and an even greater number of unpublished materials on the training and development of managers. There is little controversy about training in the technical or administrative skills managers may need (e.g., preparing a zero-based budget, developing long-range forecasts from trend and survey data, conducting a performance appraisal). There is considerable controversy about the training needed in many management jobs in such transferable skills as communicating with others, planning and organizing work, managing one's time, and decision making.

Many employers as well as many vendors of training courses have developed training packages to meet what they assume to be needs in these skill areas. Yet never, to our knowledge, has there been systematic analysis of management tasks and jobs across a spectrum of technical fields to identify precisely what managerial skill requirements are truly transferable from one management job to another. Nor has there been an adequate analysis that compares such skill requirements across levels, or identifies which skills at each level facilitate the movement to the next higher level.

Management Skill Curricula

Responsibility for developing generalizable management skill training in the Bell System has been allocated to the Human Resources Department at AT&T. Ultimately, a management skill development curriculum will be developed for each of the possible levels, perhaps labelled one through five, regardless of department or specialty. Studies of first-level, second-level and third-level managers have already been undertaken, with detailed task analysis results for first-level managers and for newly appointed second-level supervisors. Some of the results and planned use of the latter study will be discussed here.

Study of new second-level managers. The objectives of the study (Youngblood, 1978) included:

- Defining the job requirements common to second-level managers with supervisory responsibilities, and the performance standards for those requirements;
- Measuring skill characteristics of successful job incumbents ("master performers");
- Identifying differences in skills between successful second-level managers and newly appointed second-level managers; and
- Determining training needed to eliminate those differences.

The primary techniques used in the study, performed by a task force of Bell System training people, was a form of task analysis adapted for Bell use. However, in this study, it was important to identify those skills that were common to several different departments (five were used: Customer Services, Network Services, Operator Services, Marketing, and Comptrollers — very diverse in their functions and job requirements). The basic data were obtained by interviewing and observing managers considered to be "master performers" at the second level in any of the five departments and in one of seven operating telephone companies. Information was also obtained from managers at first, third, fourth, and fifth levels who worked in the same organizations as the "master performers." A total of 47 second-level managers and 35 managers at the other levels were included in the study.

The first product of this analysis was a model of a "master performer" as s/he now operated in those companies. The model included 37 tasks that were grouped into 14 functions, to which three functions were later added. Skills and knowledges were derived from the tasks, and performance standards and means of measurements were established for each skill. Finally, diagnostic tests were developed around the tasks and skills. These tests were administered to a sample of 21 "master performers" (to verify the model) and 35 newly appointed second-level managers to identify differences in their performances as compared with "master performers."

Generalizable functions, tasks, and skills. The products of this task analysis, which extended over several months, can be illustrated by showing how functions, tasks, and skills are related to each other (see Figure 1).

FUNCTION: MANAGING ONE'S OWN TIME

Function-level Knowledge (1 of 4): Know that if function is not performed effectively, it will take longer to perform many job activities, whole activities may be inadvertently omitted, and subsequent tasks may be affected.

Task (1 of 4): Handle Paper Flow

Sub-Task (1 of 2): Sort Items

Derived Knowledge:	Know order and flow of paper through organization.
Derived Knowledge:	Know to use routing mechanism.
Derived Skill:	Determine importance of items in paper flow (e.g., time constraints, impact on organization, personal job requirements, follow-up required, relevance to work force, etc.).
Derived Skill:	Discriminate between own work and other's work.

Figure 1. Example of relationship of functions, tasks, and skills.

If the two derived knowledges and two derived skills are examined for their generalizability across organizations, several conclusions can be drawn:

- It is possible to identify knowledges and skills that, at some level of detail, are generalizable across organizations.
- The level of detail becomes critical, however, in any practical judgments about generalizability. For example, a manager entering from another organization or level may know "it is important to learn the order and flow of paper as quickly as possible on a new assignment," but is not likely to know "the actual order and flow of paper in an organization" prior to being in the organization. Another example is a manager just coming into a second-level job, who might be able to "list the factors affecting the importance of items in paper flow," but is not likely to be able to "determine the actual importance of items" until after learning what the constraints, impacts, requirements, etc., are for the specific assignment.

Another conclusion might be that the only transferable part of such skills is really the knowledge of the basic concepts and variables, not the application of them in the current assignment. This is consistent with the conclusions of the Wiant study that the "specificity of transferable skills would depend upon the similarity between the jobs considered—the more similar the jobs, the less abstract the skills" (Wiant, 1977).

Generalizability problems and promises. Remember that the ultimate objective of the study (Youngblood, 1978) reported here is to identify which of the task/skill areas may require the development of general management training to expedite the mastery of new second-level managers. The possibility of developing effective generalizable training is reduced by the same specificity/abstraction problem: If the skill must be taught at a high level of abstraction in order for it to generalize across jobs and organizations, will it still generalize readily from the abstract to the specific context and content of the job?

It is interesting to note the marked similarities between the transferable skills identified in the report by Wiant, from the conferences with employers, with the list of functions developed from our study of second-level managers (see Table 1).

If such skills can be taught effectively, then it is also possible to measure an individual's existing ability level in the skill. Thus an individual could be assessed for his or her occupational adaptability—that is, the ability to move readily from one assignment ("occupation") to another because of high skill levels in generalizable/transferable skills.

Study of Career Movement From Non-Technical to Technical Jobs

"The Equal Employment objective for the Bell System is to achieve . . . an employee profile with respect to race and sex in each major job classification, which is an approximate reflection of proper utilization. . . . This objective calls for achieving full utilization of minorities and women at all levels of management and non-management, and by job classification, at a pace beyond that which would occur normally" (from an AT&T policy statement in its Affirmative Action Program).

One broad goal within AT&T's Affirmative Action Program has been to facilitate the movement of management women who have traditionally been employed in non-technical areas of the business, so they can move into more non-traditional technical areas. An efficient approach requires that women be identified who have relevant, valuable skills that are readily transferable to technical

Comparison of Skills Lists

Bell System (Youngblood, 1978)	*Employer Sample (Wiant, 1977)*
Maintaining upward communications	1. Communicating
Maintaining downward communications	
Maintaining peer communications	
Providing written communications	
Involvement with meetings	2. Working with others
Community relations	
Problem solving	3. Problem solving
	4. Analyzing/assessing
Planning the job	5. Planning/layout
Managing time	
Controlling the job	6. Organizing
Developing subordinates	7. Managing others
Providing performance feedback	
Decision making	8. Decision making
Creating a motivative atmosphere	9. Positive work attitude

TABLE 1

management jobs, while at the same time jobs are defined in terms of their need for such generalizable skills. When a match can be made between available and needed skills, the individual can be a part of a program that fits those skills and others to the needs of a specific assignment.

The Technical Management Preparation System. AT&T developed one model (Pearlstein, 1978) for a special transition process to facilitate the movement of managers (especially women) from non-technical jobs to technical jobs at the first, second, or third level. This approach, referred to as the Technical Management Preparation System (TMPS), is illustrated in Figures 2 and 3.

The purpose of the "analysis of targeted management jobs" in Figure 2 is to define and update which lower- and middle-level management jobs have underrepresentation of protected group members, and what those jobs may require in terms of preparation of "non-traditional" managers to make the transition. The purpose of the "analysis of non-traditional managers" is to define and update who these transition-ready managers are (and especially who the most occupationally adaptable among them are), what they can do that is relevant (transferable) to the targeted jobs, and how their personal characteristics would relate to the organizational characteristics of the targeted jobs. Once those factors have been determined, the "transition gaps" can be identified, including differences between technical background and required technical expertise, and differences between personal and organizational characteristics. Finally, when the transition gaps have been identified, existing organizational resources can be analyzed in terms of their suitability for helping to bridge these gaps. At the same time, local practical constraints on resources can be defined.

The actual transition process begins after the analyses. Figure 3 shows the interrelated subsystems that may be used during the transition process. A given organization may use one, several, or all of these subsystems, depending on its needs. The double-headed arrows indicate that the nine subsystems are interrelated through their impacts on transitioners and target jobs.

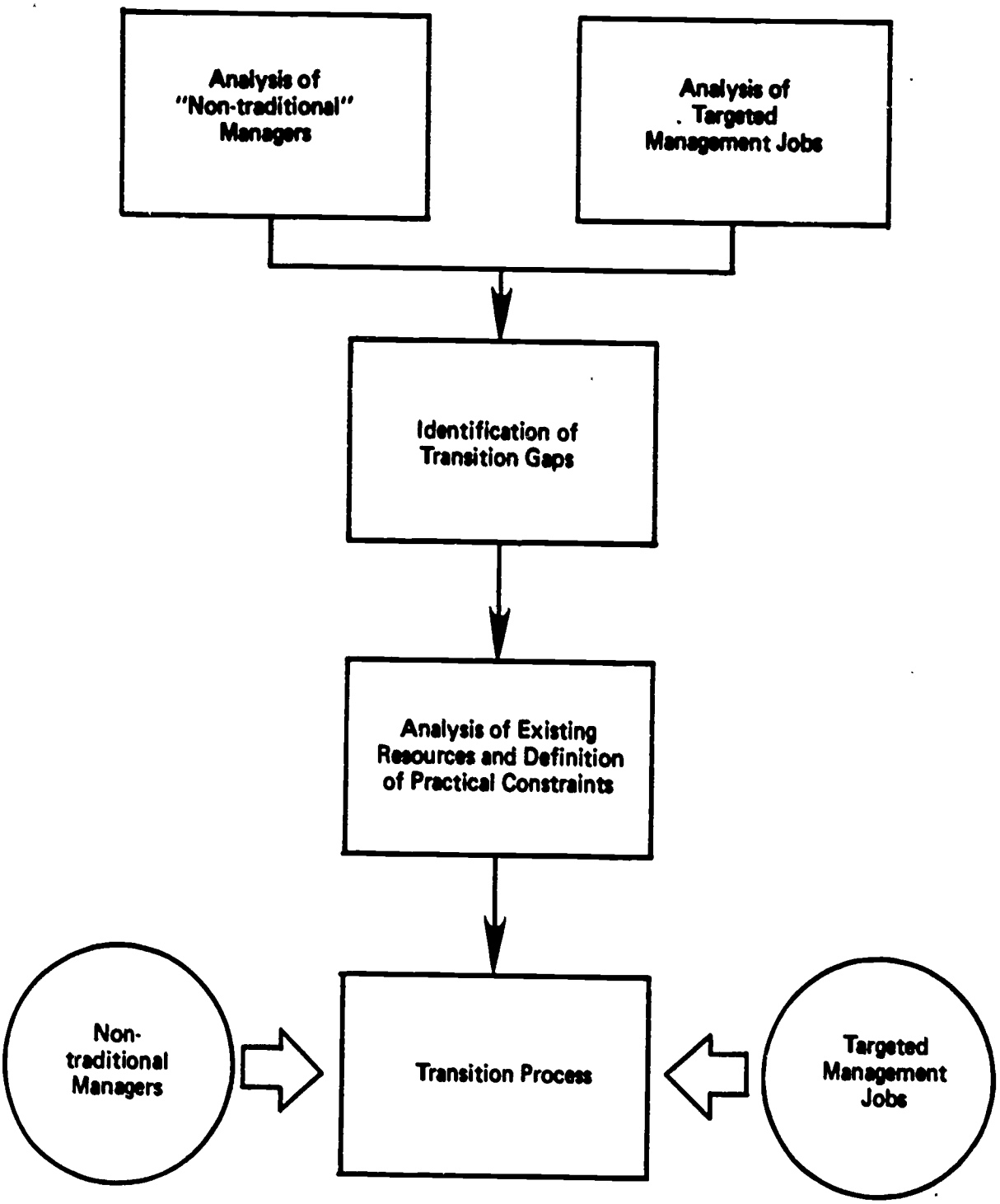

Figure 2. Simplified version of the TMPS model (Pearlstein, 1978).

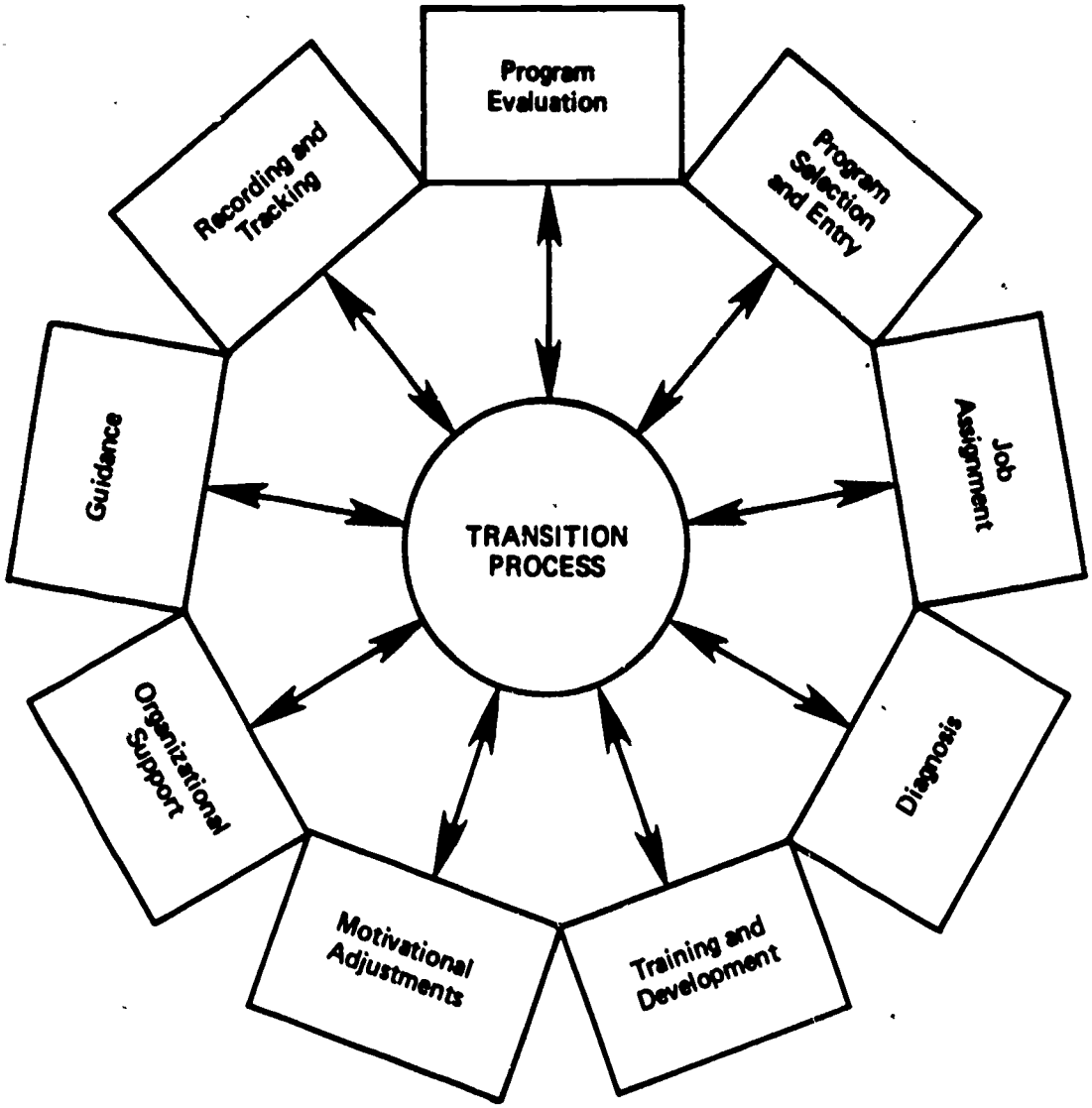

Figure 3. Detail of the transition process (Pearlstein, 1978).

The first phase of this study concluded that it would be appropriate to provide some of the implementing elements of the TMPS model, especially in the area of needed training. The development of TMPS modules is underway now. An emphasis will be given to a class of transferable skills called "coping skills," one example of which is "Job Interrogation Skills." These help the "transitioner" know what to ask about a new job or assignment in order to get into it quickly and avoid some of the usual pitfalls facing a newcomer. These skills are allied to some skills that are developed in school and other vocational preparation settings, but they are adapted to the specific needs of a technical management type of job within a particular organization.

Other kinds of coping skills that women may find useful in making these transitions to jobs traditionally held by men include working in a male-oriented environment (both physically and psychologically), dealing effectively with stereotypes and attitudes, seeking out a support system, etc. Means for developing and reinforcing such skills will be incorporated into the design of a Technical Management Preparation System.

By extension, the TMPS model can be generalized to any job transition situation. In Figure 2, the upper left box would be an analysis of typical skills of an available pool of employees and the upper right box would be an analysis of the targeted available jobs. Or, in an individual situation, the upper left box would be the analysis of an individual's skills and the upper right box would be the analysis of the specific job or jobs to which he or she might be transitioned. The transition process is obviously facilitated by the number of pertinent transferable skills the individual possesses.

Some Conclusions about Transferable Skills and Occupational Adaptability

There is no question that the related concepts of transferable skills and occupational adaptability are extremely relevant (and in fact critical) to employers in their continual efforts to obtain, place, develop, and move qualified people within their range of employment opportunities. On the one hand, employers need to deal with each employee or prospective employee as an individual, while on the other hand human resources management methods must be built on some common denominators of identification and measurement. Furthermore, those methods must be valid for the jobs under consideration and non-discriminatory under any circumstance. If both jobs and people are analyzed in terms of transferable skills, there is an implicit requirement to prove that the skills are, in fact, required by the jobs (essential for validity purposes), and to prove that the skills can be reliably measured in individuals (necessary for non-discrimination purposes).

Large employers like the Bell System can afford to do the research and development necessary to adapt the concepts to their own circumstances, and, in fact, they are doing so. More large employers could be using the concepts if they had a greater understanding of their utility and the company's need to facilitate their employee movement process. The medium or small employer, it seems to me, will have to have that same understanding and motivation, but will have to depend primarily on the packages developed and made available to them by others, or developed and implemented in collaboration with others. The programs cited in the National Center's review (Miguel, 1977) of 14 organizations with exemplary programs or packages dealing with transferable skills illustrates the range of possibilities.

A number of difficulties keep surfacing in trying to use the concepts of occupational adaptability and transferable skills. They include: the changing nature of the work and jobs in technology-oriented organizations; the fluctuating nature of the job market in skills, differing from place to place as well as from time to time; the role of the individual in influencing job and career change

versus the role of the organization in utilizing the talent available for the jobs required; and, the apparent difficulties in measuring and assessing transferable skills, especially within an Equal Employment Opportunity climate, and the related difficulties in developing skills with components that are readily transferable.

Dwelling on the reasons why the concepts of transferable skills and occupational adaptability are so difficult to implement will not facilitate efforts at implementation, however. It is my strong belief that in this area—as in so many others of human resources management—we already know a great deal more about what to do than we are in fact doing. In order to facilitate implementation, the following kinds of activities could be undertaken by agencies such as the National Center for Research in Vocational Education:

1. Undertake an advocacy effort aimed at secondary education, technical and vocational institutions, and colleges and universities, especially in programs for continuing education of adults, to develop a greater awareness of both the concept and the necessity of occupational adaptability in today's job market. Supplement this awareness with concrete examples of transferable skills appropriate for various broad job families, e.g., technical crafts, data systems jobs, clerical work, low-level supervisory jobs, mid- and high-level managerial positions, etc. Encourage development of special courses in the practical aspects of occupational adaptability and transferable skills.

2. Seek to establish collaborative programs between an affiliation of specific kinds of employers (e.g., electronics firms, data processing firms, banks, etc.) and a university, consulting firm, or agency to undertake the necessary analysis and development of methods, measurements, and systems to facilitate implementation of the transferable skills approach within the industry type. This kind of concentration would also allow for some projection toward future trends and changes in technology, and therefore in skills.

3. Stimulate organizations whose business it is to conduct seminars and workshops for a wide segment of American management to produce and offer courses related to occupational adaptability and transferable skills. There is a great upsurge of interest in the whole career planning area, with a concurrent upsurge in seminars, books, and articles, so that the occupational adaptability concept has a potentially large audience.

4. Write and publish specific articles in a wide variety of specialized publications aimed at employers (e.g., training journals, personnel journals, management journals, specific industry journals, etc.), as well as at vocational education and counseling audiences. Also, make presentations and give papers at conferences and conventions of specialized groups, such as the American Society for Training and Development (ASTD) and the American Society for Personnel Administrators (ASPA). It would be important in these articles and presentations to relate the adaptability concepts to concepts and processes with which the audience is familiar, so that the concepts are seen as logical extensions of accepted techniques that will provide a new, added value to the user.

It is my personal opinion that occupational adaptability and transferable skills are concepts that should lead to the development of valuable techniques in many areas of human resources management, from the hiring process to the retirement process. I also believe that the concepts are useful to the individual employee as well as to the employer, regardless of size. Furthermore, a lot of refinement in concepts and ideas is not needed; the National Center for Research in Vocational Education has done an outstanding job in exploring the concepts along the complete range from theoretical to practical, from conjecture to experience, and from the individual need to the organizational problem. The National Center's series of reports are filled with facts and insights for everyone, from those naive in the concepts to the most sophisticated.

Let's not emphasize more research and general discussion of the subject. Let's get it out there into the real world and get it working on everyday problems. Experience will be the best motivator for acceptance, and will lead to even more experience. In other words, "Try it — you'll like it."

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THE EARLY YOUTH EMPLOYMENT SYSTEM

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THE EARLY YOUTH EMPLOYMENT EXPERIENCE

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The search for understanding of "education-work" relationships seems to be more diligent now than at any time in recent history. Educators particularly are in search of knowledge of how the youth employment system works: what employers are looking for when they hire, and what kinds of preparation result in success. The more thoughtful investigators are looking beyond this to what kinds of preparation can be serviceable for a long time, rather than merely in landing a first job, to the identification of skills that are "transferable." The idea is to find out what the work needs are, and adapt the educational offerings to them.

This search has engendered a number of philosophical debates about the appropriate purposes of education, as well as differing opinions about the practical effectiveness of some existing educational programs in matching to the needs of work. Whatever the debates, educators' search for the knowns has so far proved far from satisfactory. The "key facts" seem to be elusive, and the issue is confused by the many conflicting statements made both by representatives of industry and by academics who are producing the research monographs.

It is not unusual to hear people with credentials to speak on such matters say that good public school skill-training is vital, but also say that industry prefers to do its own training. Further, some experts tell us that employers are mainly concerned that youth can read and write, while others say that employers try to hire those who have already had work experience (and have thus acquired job skills). Finally, the experts tell us that the economic returns of education are decreasing, while it is becoming harder to get a good job without the "right kind" of education. These conflicting statements are partly the result of having such a vast and varied economic system, where different segments each have their own perspectives. The differing statements may actually not be as contradictory as they appear. Even so, it will be an enormous challenge to derive any kind of educational approach from any set of principles assumed to govern the behavior of American enterprise.

The modest goal of this paper is to describe the youth labor market at its point of interface with schooling and a few years beyond, and more particularly to identify both the apparent and real contradictions in how the youth labor market seems to operate. It is not the purpose of the paper to try to tell educators what they should do about it, although some implications will be discussed.

Youth Employment: Getting Better and Getting Worse

Sooner or later, a discussion of education for occupations gets around to the problem of youth unemployment and how changes in education might be useful in reducing the problem. That discussion is usually confined to the youth unemployment rates and how they have risen. The measure of the youth unemployment rate carries too much of a burden in such discussions, and the employment situation of youth can't be summed in this single statistic.

It may come as a surprise to many that youth employment has been growing by leaps and bounds. The number of teenagers employed has soared from 4.2 million to 7.6 million in the last 15 years, an increase of 80 percent. The employment increase among 16- and 17-year-olds alone was a whopping 1.5 million. This compares with an increase of only 32 percent for those over 19 years of age in that same period.

Although their numbers are no longer factored into the national statistics, we know that the number of employed 14- and 15-year-olds moved up from over 1.1 million to just under 1.5 million, in this same 15-year span. Just under one out of six of the 14-to-15-year-olds were in the labor force at the beginning of the period, and just over one out of five at the end. In the decade before 1962, the labor force participation of these youngsters had been moving down, one factor in the recommendation of a presidential commission on employment statistics that they be removed from the official statistics.

This tremendous growth in teenage employment was accompanied by a tremendous growth in the teenage population (the result of the World War II baby boom) moving into the labor force in the early 1960's. A critical question is whether jobs for these young people kept pace with their numbers, and the surprising answer is that, in one way of looking at the matter, they did. In 1962, before the population growth had registered much in the labor force, 39 percent of all teenagers were employed. By 1977, this employment ratio had moved up to 46 percent.

Unfortunately, a more critical measure shows that the job growth did not seem to have been enough, because the measured unemployed rates for teenagers moved up considerably in those same years from 14.6 percent to 17.7 percent. The reason was that while a higher proportion of teenagers were at work in 1962 than in 1977, an even higher proportion were "in the labor force" (working or looking for work). For 16- and 17-year-olds, the labor force participation rates rose from 34.9 percent to 46.3 percent, and among 18- to 19-year-olds, the rate rose from 58.2 percent to 66.3 percent. From these percentages, we can assume that more youth are working, but more youth are also looking for work and not finding it ... or at least not finding it right away.

If the foregoing tale shows unusual employment expansion, the same statistical sources give a very gloomy picture of *dwindling* employment opportunity. While the situation of youth has generally improved, it has been due to an improving situation for white youth; things have been going the opposite direction for black youth and other minorities. Fifteen years ago, 33 percent of all black teenagers were employed; by 1977, the proportion employed had dropped to 24 percent (compared to 46 percent for all teenagers). In the matter of just plain quantity of job opportunities, this is where the crisis is. And to the extent that the promise of employment contributes to the motivation to learn and stay in school, it is a severe problem for educational institutions as well as for those responsible for employment.

Job Quantity Is One Aspect of the Situation, the Type of Job Another

The foregoing discussion was limited to the simple statistical counts of youth and working youth. This is about all the ordinary statistics tell us. In 1962 (during October), just over three out of ten employed teenagers were enrolled in school. By 1976, 55 percent of those employed were enrolled in school. This means that there was a tremendous expansion of *part-time* employment for teenagers who were both working *and* going to school.

The increase in working student teenagers is almost startling. There were just over a million of them in 1962. By 1976, their numbers were over 3.8 million. The growth in employment of

those not in school was of modest dimension, from 2.3 million to 3.2 million. In this period, the labor force participation rates of teenage students jumped about 10 percentage points; the rate for 18-to-19-year-old females doubled, and had almost caught up to that for males of that age. At any point in time, we can expect to find from four to five out of ten teenage students in the labor force, and over the course of an entire year, up to three out of four are working or looking for work.

This means that the economy has come up with an awful lot of part-time jobs tailored to fit the school calendar. It is most fortunate that the needs of the business community happened to expand so much at a time when so many youth wanted to work. An alternative explanation is that certain kinds of businesses expanded precisely *because* this large supply of youth labor had become available. Could there have been so many fast-food chains if there had not been this large supply of young people to work for them? This is a little explored aspect of the youth labor market situation. Our knowledge is limited to the major industries in which student employment exists (see Table 1).

TABLE 1

Major Industries Employing Youth

Industry	*Age (percent distribution, 1976)*			
	16-17		*18-19*	
	Male	*Female*	*Male*	*Female*
Agriculture	11.5%	2.1%	5.9%	1.4%
Mining	.2	1.2	—	.4
Construction	3.0	.4	3.7	.4
Manufacturing	9.6	3.2	8.3	4.5
Transportation & Public Utilities	1.7	.3	3.0	.6
Wholesale and Retail Trade	54.0	55.5	47.1	43.7
Service and Finance	18.0	36.1	29.1	46.5
Public Administration	.4	.3	1.8	2.0
Self-employed	1.8	2.0	1.1	.4

(Young, 1977, p. A-15)

The statistical breakdown shows that what is generally known is confirmed: Teenage workers are almost wholly in trade, service, and finance industries. But the percentage distribution dramatically portrays the extent to which the *student* population is in a narrow segment of those industries. Looked at another way, about one out of ten of *all* who work in these industries is a teenager still in school.

These tremendous gains in part-time employment among teenage students are concentrated in the white sector of the labor force. Labor force participation of black (in-school) teenagers is only about half that of their white counterparts, and the unemployment rate of those who are in the labor force is a whopping 37 percent, compared to 15 percent for whites. While 40 percent of all white teenage students were employed in October of 1976, only 15 percent of all black students were employed. White students have been establishing their advantage in the labor force (with work experience and contacts in the employment world) before they ever leave school. No doubt, this gives them a considerable advantage over blacks and other minorities when they leave school. One way to equalize this advantage would be through *much* expanded opportunities for work/study-type programs, in order to make up for a lack of these part-time jobs for black students in the regular economy.

While this brief description leaves much unanswered about the character of the growing market for student labor, it just about exhausts the availability of information on it. What is known, however, underscores the trend for more and more youth to pursue education and work as simultaneous activities, rather than first one and then the other.

The same industries listed in Table 1 are very heavy users of young high school graduates and dropouts. The only significant difference in their occupational pattern, as compared to working students, is that a few more of these youth move into jobs in manufacturing industries. About one in ten working students get the (generally) better-paying manufacturing jobs; this jumps to about one in five of the young high school graduates and dropouts. Further, there is very little difference in the industrial distribution between those teenagers who dropped out of high school and those who completed it.

This great homogeneity in the industrial activity of teenagers is consistent with the possibility that industry looks on young workers simply as young workers, and other matters of status do not make great differences (except for race and sex differences in secretarial jobs). This attitude of industry is also suggested by a number of studies that have attempted to determine the age criteria that employers apply in the hiring process. (These are described in some detail in Barton, 1975.) A nation-wide study of employer hiring practices made by the Bureau of Labor Statistics (Gavett, 1970) disclosed that about two-thirds of employers large enough to be subject to the Fair Labor Standards Act did not, as a matter of practice (if not policy), hire youth under the age of 20. An in-depth study of employer hiring for entry level jobs in occupations with advancement possibilities (in New York and St. Louis) disclosed high percentages of employers not hiring anyone under age 21. A scattering of other smaller studies showed similar results.

Unfortunately, we do not have regular statistics on "the age of hiring" in American industry, so we really don't know what the trends are over time. However, putting the pieces together, it appears that we have been increasing the hiring of youth in service industries heavily dependent on youth labor, paying around the minimum wage, and generally with the expectation that the young people will move on to something else as they get older (which they mostly do); at the same time, we have also been increasingly denying entry into industries and establishments that are heavy employers of adult labor. Overly simplified, there are more and more "youth jobs" that young people hold temporarily, but fewer opportunities at ages under 20 or 21 to get into entry level jobs in larger firms with advancement structures of the kind that are filled mainly by "adults."

The existence of these two trends, moving simultaneously in opposite directions, contributes to the confusion about the dynamics of the youth labor market. To compound matters further, the distinction made here between "youth-type" jobs and entry rungs in adult employment is useful for a lot of jobs, but by no means would all fit into such neat categories. The distinction is not made here to disparage one particular kind of employment opportunity for youth, as compared with another. The point to consider is that the public system of vocational education trains youth for jobs that are expected to place them into channels of job advancement ... into the world of adult employment. These are the jobs that require some extended training. Vocational education does not need to train youth for counter work in fast-food chains, nor for jobs in the neighborhood car wash. This development is one that the educational community needs a better means of tracking. In situations where employers are not hiring under age 21, quality public skill training, even in growing occupations, is not going to result in employment for the 17- and 18-year-old high school graduate.

Industry Does Its Own Training; Industry Doesn't

There are some strongly held opinions about where skill training does take place, and sometimes even stronger opinions about where it *should* take place. I was in a meeting recently of a large task force with a membership broadly representative of the community (a large metropolitan area), and with industry and education represented. A representative of a very large company stated that the company does, and prefers to do, its own training of entry-level workers (it also trains for advancement within the company), and that what it wants from the schools are people who have a good "basic" education. The reaction of the vocational educators present was that (a) the vocational classroom can teach the job skills that industry needs, (b) it does so now, and (c) employers in fact hire the graduates. The pursuit of the discussion revealed that this employer did hire its secretaries from the public classroom, and accepted the predominance of that particular kind of training in the public education system. On the other hand, the vocational educators said they didn't try to teach the specific job skills used by that employer, since it was a well-known and long-existing practice for that company to do its own training. In terms of actual labor market practice, both were quite correct.

If a classical economist had entered the discussion, he or she might have advanced the distinction between *general* and *specific* skill development, and argued that the former is the responsibility of the schools and the latter a responsibility of the employers. The latter, since it is training for a specific work station, is not a skill generally transferable to other employments; therefore, carrying the expense in the public school budget represents a subsidy to a specific employer. In practice, the distinction usually falters: Where does general training shade into specific? And who is to say that the large public investment in teaching high school students to type and take shorthand is not an economic or equitable use of tax dollars?

Unfortunately, there is very little systematic study of the training that is given by industry. Surveys have usually investigated formal classroom situations, and not structured on-the-job training, which is the predominant approach in industry. Skill training is often an integral part of the production process, and not separately recorded and accounted for. Compounding the difficulty, the dividing line is not clear between receiving structured training at a work station, and just absorbing skills through supervised experience. And in hiring transactions, experience is often a proxy for skills.

About 10 years ago, the Bureau of Labor Statistics began to study the practicality of systematic measurement of industrial training, first with a feasibility study (Neary, 1974) and then with a

survey of occupational training in selected metal-working occupations (Neary, 1977). The survey covered 14 occupations in four metal-working industries and any "structured program" designed to "acquire or improve skills" in those industries. Even within a set of related industries and occupations, training practices turned out to be quite varied. While only 14.7 percent of all the companies in the four industries provided structured training, there was great variation by size of firm. In the smallest firms (under 20 employees), under 10 percent provided such training; in the largest (1,000 or more employees), just over half provided training. Among these large firms, 41.5 percent in electrical machinery provided training, compared to 73 percent in transportation equipment. Among the 14 occupations, a low of 1.3 percent in electroplater occupations were enrolled in training, compared to a high of 23.5 percent in welding and frame cutting. Of those enrolled, 71 percent were receiving qualifying training and 29 percent were receiving skill improvement. Seven out of ten were receiving structured on-the-job training, and 31 percent were getting their training away from the production site.

This is only a glimpse of the whole, in a relatively small corner of industry. But it confirms that there is no single pattern in industrial training. Further, there is no reason to believe that current approaches are necessarily the best ones, or that the way training is done in one geographical location is the way it is done elsewhere. It isn't a matter of just finding out what the pattern is and fitting into it, but of finding the best pattern for matching the needs of the local youth labor force and the needs of industries. This can be done through frequent interchange between educational and employment institutions.

Occupational Mobility: How Much Is a Lot?

Some remarks are in order about occupational mobility, but just a few will quickly exhaust what is actually known about the subject. Educators now realize that most people do not start with one occupation and stick with it for life (although to confound matters, professionals often do so). But we do not really know what the mobility statistics that are increasingly becoming available mean. For that reason, I will talk about them, not with them.

The best-known fact, which turns up in all the measurements, is that the mobility rates for young people, especially teenagers, are higher than for any other age group. Youth try on a number of jobs for size, so the explanation goes. This is thought by many to be a sensible way to find out what kind of work you want to do. On the other hand, this kind of job-shopping is not what is envisioned by the counseling and guidance profession, for it tries to discover aptitude and interests first, and guide youth towards a "compatible" occupation.

The major studies have not only found that youth generally make a number of job changes; those that measured such things, most particularly Parnes' and Kohen's longitudinal study (1971), have found that the movement is generally upward in terms of wages. It is hard to know what to make of all this. If youth are in casual youth-type jobs until they attain the "adult" age of readiness (around 20 or 21), then job mobility is built into the system. For that group, the move is typically from a job that requires little advance preparation to another job that requires equally little. As a 16-year-old ages, year by year, better-paying jobs open up, as much a result of accumulating birthdays as from changes in ability (meaning employment skills). By the time the first breakthrough occurs in adult-type pursuits at the ages of 20 and 21, the shuttling around in the youth labor market may have helped form occupational expectations. But no one really knows. It is also possible that experience in the teenage labor market is not all that good of a preparation, in terms of attitudes and expectations, for an adult-level job — a point made forcefully in the work of Doeringer and Piore (1971) on secondary and primary labor markets.

The stereotypes of both the successful workers and the failures apply to the occupationally mobile. The successful worker moves up and moves on. The unsuccessful worker frequently is forced to move on, but must cast around to try to match what skills he or she has to offer and what is available.

The measurement of mobility rates is still very much dependent on artificial categories of what constitutes an "occupation." After all, there are about 25,000 job titles in the *Dictionary of Occupational Titles*, and they have to be grouped in some way. If the half-dozen or so broad census categories of occupations are used, the mobility rate among them (particularly after age 20) will not be large. If all 350 or so detailed census occupations are used, the measured rate of movement among them will, of course, be considerably higher. And *job* changes are more frequent than *occupation* changes, although the difference in demands on the individual changing employers can be as great as making a change across the official categories of occupations.

The popular conception of a radical shift in later life to a whole new way of working and living, as conveyed by a lot of popular literature on life transitions or "passages," is probably a reality only for a small segment of the work force; by age 45, most workers are locked into work patterns, and the change rates tail off sharply with increasing age.

The significance of occupational change throughout life is considerable, however, and it is not my intention in this brief discussion to suggest otherwise. The point, rather, is that the study of occupational or job mobility is still very primitive, and the meaning of what few statistics we do have available is obscure.

Schooling Helps in the Labor Market; Schooling Doesn't

One of the more confusing debates of the 1970's has been over the role of schooling in economic success. *The Overeducated American* (Freeman, 1976) caused one debate, already well underway, to become louder. The interaction of education credentials with demographic change and slowed economic growth in the 1970's has been of great consternation to educators. At the same time that steady or declining enrollments, due to demography, have throttled academic growth, economists have been putting out the message that the economic returns on investments in education have been declining. That hasn't been the best news for student-hungry college campuses.

While there is wide agreement that persons with advanced degrees are not doing as well in the labor market as they used to, there is still disagreement over whether an oversupply of college graduates has led to declines in relative earnings among new college graduates. A rather impressive analysis by John Grasso (1977), using Parnes' longitudinal survey and reanalysis of data from the Current Population Survey, found declines in the relative earnings of new labor market entrants as a group, which is consistent with the hypothesis that this large baby-boom cohort has put individuals within it at a competitive disadvantage with other, smaller cohorts.

When college graduates were themselves asked how they were doing in the labor market, Lewis Solmon (1977) found that by and large they thought they were doing pretty well, and 75 percent were doing work that was either closely or somewhat related to their majors.

A lot of attention has been paid to the relative labor market success of postsecondary education graduates. Some time ago, the hottest issue around was keeping youth in high school, and

there was one stay-in-school campaign after another. That was especially true of the 1960's. It is perhaps ironic that the high school retention rate began to level off around 1967, and hasn't improved since. One reason may be that the high school diploma just doesn't seem to make much difference in the early years of labor market experience.

Most statistics comparing high school dropouts and high school graduates in terms of labor market success span the ages of 16 to 21. Only one careful longitudinal study (at least to my knowledge) started with young people of approximately the same age who were still in high school, and traced them for years after leaving school. Eight years of those follow-up data are now available from the University of Michigan's "youth in transition" project (Bachman, O'Malley, & Johnston, 1978). The study was of a national sample of 2,000 tenth-grade males, first surveyed in 1966 and last surveyed in 1974. The important results are in Table 2.

TABLE 2

Longitudinal Survey of Occupational Distribution of High School Dropouts and Graduates

Occupation	*Percent Distribution*	
	High School Dropout	*High School Graduate*
Professional/Technical	0%	4.0%
Manager/Proprietor	10.5	5.6
Clerical/Sales	2.9	9.9
Craftsmen	21.0	24.6
Operatives/Service Workers	37.1	36.4
Non-Farm Laborers	15.2	10.5
Farmers	1.0	2.5
NA	12.4	6.5

(Bachman, O'Malley, & Johnston, 1978)

Five years out of high school (for the graduates) and seven and eight years out (for the dropouts) finds little difference in the occupational distributions of those who finished and those who did not. The differences begin to show up when there had been some college, and they become quite striking when college graduates were compared to all the rest. In hourly wage rates, the dropouts had a slight edge on those high school graduates who had no college, probably because the dropouts, having been in the market longer, had more experience. At the time of the 1974 survey, the dropouts had a higher unemployment rate, almost double that of the graduates. In view of the other statistics, the reasons are not readily apparent. Dropouts may well have a higher job-leaving rate, with "dropping out" more of a life pattern than in the case of graduates.

There has been considerable debate about what kind of a high school education helps most in the labor market, and there have been many studies that compare graduates among the standard high school tracks. Generally, such studies do not find large differences. Apparently, having a high school diploma does not itself make much of a difference for those who do not continue their schooling beyond that. This is a labor market reality with which educators will have to grapple.

Summary

The major theme of this paper was to describe the complexities and incongruities of labor market dynamics. The other side of this rather dreary picture about the value of academic credentials is the unquestionable fact that, to the individual, they *can* make quite a difference. The student who does not have a high school diploma is handicapped in getting into college, which still does make a difference in access to the more desirable jobs. And the irony is that as more and more youth obtain educational credentials (thus making them less scarce in the market), it becomes more important for an individual to have them or be disadvantaged relative to those who do.

A *very* brief summary of my observations are as follows:

1. Despite higher measured teenage unemployment rates, both the numbers and proportions of teenagers working have been increasing. That's not true for blacks, and the change there is in the opposite direction. Despite favorable overall trends, job growth has not kept up with the increasing percentage of teenagers who are seeking work.

2. The really large growth in teenage employment is among students, not out-of-school youth, and students are steadily increasing their rate of labor force participation. This student employment is mostly in service, retail trade, and finance industries. The occupational distribution of out-of-school youth and high school graduates is not much different than for students, except that more nonstudents are in manufacturing. While these "youth jobs" have been growing, adult entry-level jobs are increasingly foreclosed to youth under 20 or 21 years of age. So there are two important trends, in opposite directions, and the available statistics mask this aspect of the situation.

3. Great diversity exists in the training practices of American industry, depending on which industry it is, size of firm, and even geographical area. It is true that industry hires young people who've acquired skills in the public classroom, but it is also true that industry prefers to do its own training. It is widely true that industry would prefer to hire workers whose skills are already developed, but this frequently means hiring someone who has had prior work experience, as an assurance that the required skills have been learned.

4. While there is more attention currently being given to the rates at which people change their occupations, our knowledge about how to get good measures and judge what they mean is still primitive. We do know that the highest rate of mobility exists among the young, which is not surprising, given the dynamics of the youth labor market as previously described. Job mobility slows down with age, but the measured rates themselves are uncertain because they depend on the level of detail in the occupational classification system used in the measurement.

5. Young people who pursue further education are currently having trouble getting jobs that meet their expectations. Analysts are debating whether the economic returns to higher education have diminished *relative* to those of high school graduates, or whether the situation is true of the whole youth cohort, which is so large relative to prior ones. A six-year follow-up of 2,000 tenth-grade males raises a serious question as to whether high school graduates (not going on to college) do any better than dropouts, within three years after graduation.

American education has great diversity: of students, of basic objectives, of quality, and of approach to learning. As we move into an era with a new policy issue, an "education-work policy," we must face the fact that the labor market is also diverse and often paradoxical. Education often seeks to operate on the basis of principle and pedagogy. The employment and training system is embedded in the industrial production process, which is above all else based on pragmatic approaches and plain old American "know-how." The most productive pursuit of a better relationship between education and work institutions will be through *joint* effort, and collaborative arrangements at the community level.

And it is, after all, a better fit between education and work, brought about by closer understandings between schools, employers, and unions, that will give operational meaning to the concepts of occupational adaptability and transferable skills that are explored in this volume. If we are going to isolate factors that increase adaptability, and then try to instill them through education and formal training, the closest possible communications and understandings between school-based and employment-based personnel will be essential. So these concepts will most likely approach an operational stage where there are collaborative structures to facilitate such communication, such as local Education-Work Councils.

On the side of educators, making these concepts operational means fully recognizing the realities of the operation of the labor market, such as those summarized in this paper. If there is often a hiatus of several years between high school and the entry rungs of regular adult employment, then the real pay-off of school efforts may not be seen for a while. Where employers prefer to do their *own* skill training, it will not help much to provide those specific skills in the classroom.

On the other hand, the production supervisor and the manager would be well advised to listen closely to what educators and training experts learn about the acquisition of skills, and what core capabilities are required in groupings of jobs. Just because many employers have historically taken a casual, *ad hoc* approach to skill training doesn't at all mean that productivity can't be improved through the same kind of attention to the development of human resources that goes into developing better plants and equipment. If there is pay-off here, the nation's declining productivity rates indicate a need for it.

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TRAINING IN BUSINESS AND INDUSTRY:

A STATUS REPORT

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Judy Springer, as President of Athena Corporation, has been active in the development of training materials for Bell Laboratories and curriculum for the U.S. Office of Education. More recently Ms. Springer's activities have focused on analysis work including a Generic Managerial Skills Job Study and she has for the past several years become increasingly interested in diagnosis and intervention techniques for organization development.

TRAINING IN BUSINESS AND INDUSTRY: A STATUS REPORT

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The Athena Corporation

Training in business and industrial organizations varies widely in sophistication and effectiveness, but the best of it is very good indeed. It can, I think, make a very important contribution to the increasing socio-economic need in this country for occupational adaptability and transferability of skills. In this brief report, I will describe first the areas in which I think industry* is doing particularly impressive work, and then I will point out the directions in which I think we should be moving in order to help people increase their occupational options.

Areas of Strength

Task analysis and job studies. There is a very strong and effective technology in the more sophisticated employer organizations, especially the Bell System (AT&T and its affiliated telephone companies) and the military, for analyzing the tasks required to perform technical jobs. Task analysis is essential for a systematic approach to the question of skill transferability.

Job studies are now being successfully conducted for "knowledge worker" jobs as well as technical ones; I have personally been involved in job study efforts for second-level supervisors, management trainers, and document analysts—all within AT&T. Such job studies can lead to job-relevant selection criteria and performance standards, as well as to job-relevant training. All of these are keys for dealing effectively with EEO concerns, as well as for identifying job skill requirements for occupational adaptability. (It is clear from its publications that NCRVE is quite cognizant of task analysis and job study technology.)

Systematic development of training. AT&T, the Army, the Navy, and the Air Force have all documented systematic approaches to technical training development in multi-volume guidebooks for their course developers. These guidelines all include instructions for job studies, specification of behavioral objectives, criterion test items, design of the program, and tryout and revisions. (This is basically the "programming process" developed by people in the programmed instruction field some fifteen years ago. Many of the same people are still doing this work, but the term "programming" has fallen into disfavor and has been replaced by the misleading "instructional technology," or the more descriptive "instructional systems design.")

While this approach has been used mostly for technical training, it has also been quite valuable for management and sales training when used by skilled analysts and designers.

Interpersonal skills training. Many large organizations have been involved over the past 10-15 years in interpersonal skills training for their supervisors and managers, and sometimes for their sales people. This kind of training had its first highly visible support at TRW, but it is now common

* I will also point out important strengths in military training, insofar as I am cognizant of them.

(in modified form) in many organizations. Those that come to mind in the area of human relations training are Proctor & Gamble, AT&T, Polaroid, General Motors, Xerox, Ampex, and Digital Equipment Corporation.

A problem in these "soft" areas is lack of clarity around objectives, and little or no attempt to evaluate outcomes. However, the Research Committee of ASTD (American Society for Training and Development) sponsored a symposium on evaluating management training in November, 1978, and interest in this area appears to be growing.

Assessment. The Assessment Centers pioneered by AT&T and now in use in many companies (Bristol-Myers and Pepsi-Cola come to mind) are an important concept for assessing supervisory and management potential; however, they need work to improve their predictive validity (for on-the-job success).

What Employers Can Do

Clarifying and guiding the work. To improve the chances for success of individuals moving to new and perhaps non-analogous jobs, employer organizations should make greater use of job aids and performance guides, feedback systems, written specifications and checklists for evaluating end products, and clarification of job roles, responsibilities, and performance standards. Such tools are rare today, even in technical jobs, and are practically nonexistent for "knowledge worker" and supervisory/managerial jobs — yet not only can they quickly improve the job performance of present workers (and make supervision of their work easier), they can also ease the transition of new workers into any sort of job. The development of these kinds of tools depends on effective task analysis, job study, and work design technologies.

Matching the people to the work. Some very interesting efforts are going on now at General Electric's Management Development Center (Crotonville, New York) to apply brain research findings about hemispheric differentiation ("right-left brain" research) to task and "mental approach" preference. Conceivably, this line of inquiry could lead to a more systematic matching of people to the jobs that will suit them. David Kolb's work on learning styles (reflective observation, concrete experience, active experimentation, and abstract conceptualization) is also very promising for people-job matching.

What Educators Can Do

All the approaches I've mentioned so far are from the employer's point of view and focus on the job/task requirements. We in industry tend to take the position that we are controlling people's development, that we will assess their potential, and that we can direct them into jobs. We do have the skills to do a lot of that, if the workers will just be docile and cooperate; yet, when it comes to transferring people into non-analogous jobs, we are far from having the systems to identify people's transferable skills and match them to potential jobs. From the employer's point of view, the general education workers have received is usually too general for specific jobs, and the job training they have received is usually too specific to be easily generalized or transferred.

Expanding the individual's options. At this stage in our development, I think we need to get out from under some of the responsibility for controlling the system and help people to become more responsible for their own destinies and more effective in shaping them. If we can help people to widen their options, and make them more aware that they have options, and give them exercise

in taking responsibility and choosing — then they can help us all solve the problems of occupational adaptability and transferable skills, and they will have become more effective people in the process.

I have a fourteen-year-old daughter who says, "I'm just not the kind of person who can sit and listen to the teacher for very long. I can't learn that way." I was in a workshop session a couple of weeks ago, and there was a man there who said, "I'm not the kind of person who can just go into a room and make conversation." What has happened in both of these cases is that the person has stated, as an accomplished fact, something that does not have to be so; something that could still be in process of changing. They have said, "I have made a decision that I cannot do this. I have made a decision based on some data in my history that says I cannot start conversations—that I can't learn in classroom situations." They could just as well have said, "I can't learn math." "I could never be a supervisor." "I could never be a computer programmer."

These people *do* have options; but they just don't believe it. They don't have the conceptual model that contains the options, they don't have experience in choosing among those options, and they don't have the experience base related to each of the options that would permit them to envision choosing it.

What can we do about that? One thing we can do is to use what Malcolm Knowles calls an "anadragogy approach" rather than a pedagogy approach. We can treat people as adults and give them some experience in learning how to learn, in making decisions about what they're going to learn, and in expanding their options.

I'd like to mention two conceptual models that expand people's options in this way: Kolb's Learning Styles (not a training program, but an instrument around which training could be built), and David Berlew and Roger Harrison's "Positive Power and Infuence Program." These may be suggestive of what else could be done in this area.

Earlier, Jerry Short told an anecdote about a woman visiting in another country who had several busses pass her by before she realized that she needed to get on at the back of the bus. The style she used to figure this out, according to Kolb's model, was "reflective observation" — standing back and watching what other people did. The style she had learned from at first—that she wasn't getting the behavior she expected from the bus driver—was "concrete experience." So having found one style of learning inadequate, she switched to another. It should be possible to acquaint people with a range of styles of learning (a conceptual model with examples that they could relate to), and to get them to engage in some self-assessment around how they usually learn. Next, they could be given successful practice in other styles. Finally, they would be encouraged to make choices about what they want to practice and how they want to apply their new skills.

Harrison and Berlew's "Power" program is focused on expanding the participant's repertoire of personal influence styles. The conceptual model in this program has four styles: "rewards and punishment," which involves setting expectations, judging, rewarding, and punishing; "participation and trust," which involves showing something of yourself, trusting other people, and asking for their input; "assertive persuasion," which involves rational argument; and "common vision," which involves the charismatic leader's approach — generating a shared identity and a common view of a desired future. It is extremely important to note that none of these styles is treated as better or worse than any of the other; the point is to expand the participant's options in choice of style, from the one or two he or she usually uses, to include the possibility of using any of them at the appropriate time. The program starts with self-assessment (including input from associates) on personal influence style, followed by introduction of the conceptual model, some guided experience in trying other styles, and then the part called "self-directed learning." The individual chooses which of those styles he or she would like to practice more, and has a day and a half to do that. (The workshop is four or five days long.)

The focus of the program is on the individual making the choices. If the individual comes up to the trainer and says, "I don't know what to do now," the trainer responds, "Well, it's your choice," and reiterates the initial instructions. The individual eventually realizes that it really is his or her responsibility.

This is the other key part of the Harrison and Berlew program: behavior rehearsal and feedback. People try out a style; they use videotape and they get straight feedback from the other people in the group on how they're doing. By the end of the program, most people are rather amazed at how they can behave in a different way from what they thought was "themselves," and that they can get results by influencing with those different styles!

I think a similar kind of training can be used with quite a variety of ways of behaving, including problem-solving and decision-making. It seems to me that this relates to "future shock"—to the idea that there are people who are capable of changing and used to changing and welcome change, and there are other people who would rather not, who would rather stay where they are, and others who would rather look backwards. I suspect that a lot of people in those latter two groups may be that way because they haven't had any experience of acting differently. I think adaptability may be trainable.

Another area is in "Using Both Sides of Your Brain," which is the title of a book by Tony Buzan. The new brain research has some very interesting things to show us; we don't have to learn in just the traditional linear way. Some people, for example, don't outline subject matter easily — their heads just don't work that way. It may be more useful for them to draw a "map" of their ideas instead, using color codes! (Buzan's book shows how to do it.)

What I would like to see us do is to give people options; to give people confidence in their ability to change and to learn and to behave in different ways. That's where I think we should be concentrating our efforts in the future.

OCCUPATIONAL ADAPTABILITY AND TRANSFERABLE SKILLS: SYNTHESIS AND REACTION

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George Copa's work at the University of Minnesota included teaching responsibilities and the conduct of research in planning and evaluating vocational education programs. Dr. Copa has also served as a consultant in vocational education planning and evaluation for a number of states and the country of Portugal and has conducted a needs assessment for agricultural management training for the State of Kaduna, Nigeria. Dr. Copa has a Ph.D. in Education from the University of Minnesota.

OCCUPATIONAL ADAPTABILITY AND TRANSFERABLE SKILLS: SYNTHESIS AND REACTION

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This synthesis and reaction is organized in two parts: (a) a conceptual framework with which to analyze the symposium presentations and to synthesize their implications; and (b) a series of reactions in the form of questions or statements, focusing on implications for vocational education in particular.

Before beginning, consideration must be given to what several of the presenters have alluded to as an "educated person." Does "educated" mean chameleon-like adaptation and accommodation (adapting yourself to the environment), or does it mean more control and self-direction (adapting the environment to yourself)? Does "educated" imply excellence or sufficiency? The varying assumptions and values brought into play in determining education's goals must be made explicit and be examined critically before judging the validity or making recommendations about the mechanics of education.

Conceptual Framework for Synthesis

The framework I have used to organize the information presented in the symposium is a two-dimensional matrix whose dimensions are entitled Context and Skills (see Figure 1). The major Skill dimensions are the common types of learning—intellectual, physical, and interpersonal, or most simply, know, do, and feel.

The Context dimension contains a set of categories describing the situations or environments in which skills might be used by an educated person. The broad categories might include the familial, economic, political, religious, social, and leisure contexts. Each of these contexts can be subdivided further; for example, the economic context can be divided into production and consumption. In turn, the production sub-category can be divided into the different occupations found in the labor market.

This framework is similar to the conceptual schemes described in several of the reports of the Transferable Skills project of the National Center. Given the above structure, transferability is being able to apply various skills in new contexts. This perspective of transferability, or "adaptability," seems consistent with that used by the National Center.

Selected Observations

The following is a series of observations drawn from a critical review of the symposium presentations. These observations are not intended to be the "final word," but rather to provoke further thought and analysis.

CONTEXTS	SKILLS		
	"Know" (Intellectual)	"Do" (Physical)	"Feel" (Interpersonal)
Economic			
Family			
Social			
Political			
Leisure			
Religious			
Etc.			

Figure 1. Conceptual framework for viewing comment on transferable skills and occupational adaptability.

1. Perhaps the Skills dimension of the matrix — the know, do, and feel — are the "basic skills" to which people often refer when discussing education. These represent the transferable skills. However, the "basics" also sometimes refer to reading, writing, and arithmetic, which are heavily weighted in the "know," or intellectual domain. Where are the basics for "do" and "feel"? The original industrial arts, agriculture, and home economics courses (along with physical education) have particularly addressed the "do," or physical, domain. But where, then, are the basics for "feel"?

2. Looking at secondary school curricula, situations to which skills are to transfer (represented by the Context domain in the matrix) are perhaps best represented by vocational and other courses offered as "electives." The economic context, both production and consumption, is at least represented by vocational education; the leisure context is represented by all manner of various special appeal courses. From this perspective, vocational education courses serve as a source of context, not content! In choosing electives, students are simply choosing the context in which they want to learn. Is vocational education only a context or does it have some skills that are inherently its own?

Within vocational education are the traditional subdivisions of agriculture, business, office, and so forth. Each of these can in turn be subdivided into even more homogeneous contexts. For example, agriculture can be divided into a production agriculture and non-production agriculture context; non-production agriculture can be divided into agricultural mechanics, agricultural supplies and services, ornamental horticulture, etc. Each of these can be divided into specific occupations. The same could be done within specific occupations, such as the many levels of managers that Peterson discussed. Using this repeated subdivision technique results in numerous situations or contexts among which skills might be transferred. What is the best way to cluster these specific contexts so as to maximize the transfer process and keep the learning/teaching process efficient? If all contexts cannot be taught or learned, how does one choose the "best" few? How many are enough?

3. Why, beginning in 1917 and continuing on until today, has teaching the transfer of skills to the production and consumption (economic) context been placed in the public school, along with federal and state incentives to increase this focus? Why haven't more of the political, social, family, and other contexts been included in the school? Is it because it is so vitally important that students be taught to function in the economic context? Or, is it because it is easier for educators to teach the transfer of skills into this context—and justify it—compared to other contexts? Why are some contexts delegated to the formal educational systems and others left to non-formal systems? Are non-formal systems better at teaching skills in certain contexts? Which ones?

4. Along with transferring skills among specific occupations or within clusters of occuaptions, some focus should be given to transfer of skills from other contexts into the work context and vice versa. Some frequent transitions over time are school to work, work to homemaking, homemaking to work, and work to retirement. What types of learning and support services are needed to facilitate these transitions?

5. If the focus of education is to be transferable skills and occupational adaptability, how is "more educated" to be measured? What does it mean? Is a "more educated" person someone who has more skills? Is it being able to use the skills better (e.g., at a higher level, faster)? Does it mean being able to apply the skills in a much wider variety of situations (contexts)? Or, is it reflective of someone who can move from one context to another more quickly? Is it measured by how much time and effort it takes to adapt to a new context? Both Peterson and Springer note the problems of validating measures of "more educated" in an equitable way relative to characteristics such as sex, age, and race.

6. The notions of transferable skills and occupational adaptability imply a different way to approach the concept of occupational supply (i.e., persons able and willing to take particular jobs at a given wage). Perhaps, when students leave an educational program, their abilities should be described, from a labor market perspective, in terms of all the different occupations for which they are prepared or gifted. The graduates would not be slotted into a single occupation (e.g., welder, secretary), but might be classified as potential supply for several occupations. If the graduation certificate reflected this approach, the work context might appear more inviting and dynamic to individuals, and their choices would be communicated to the labor market more explicitly.

7. Several of the symposium participants commented on the need to describe the skills required in each occupation, and seem to be looking to employers to provide this information. Another perspective, which I happen to hold, is that educators also have a critical analysis role to perform for society. Educators must first sort out the "what is" as reflected by a job description, and weigh it against "what ought to be." Perhaps education ought *not* to mirror what is "out there"! Recall the value judgment related to goals cited at the beginning of this paper. What is the ideal balance between worker goals and employer goals? What is the desired discrepancy between the idealistic context used in school and that actually found in the current work environment? Keep in mind that education should serve a *lifetime,* not merely the worker's first job.

8. Springer introduces the notion that general education is not specific enough and vocational education is not general enough. What is the correct balance of skills and contexts in an educational program? Focusing entirely on skills may result in a lack of relevance. Too much focus on context could result in low generalizability, narrowness, and a lack of "basics." Maybe this balance should depend on the purpose of the particular educational program or level. For example, in early elementary education, the focus might be on skills and much less on context, in contrast to an adult vocational education program (such as agricultural chemical application), where context is pervasive. The point is that the balance between skills and context might best not be fixed; rather, it should be appropriate to the student's stage of career development. In general, the closer the student is to entering the work environment, the greater the focus should be on using the skills in the work context.

9. For how long does the educator have the responsibility to integrate contexts for the student? Peterson and Springer both noted that more should be expected of the individual over time. Students should learn to make the transitions between contexts with fewer and fewer support services, and should take on a larger and larger share of the responsibility for these moves. By analogy, students should become able to select what they need to learn just as they should learn to select a "balanced meal" in a cafeteria. Perhaps educators should bear less of the responsibility for delivering "balanced programs." What are the skills that individuals should be taught so that they are better able to choose what they *need* in preparing for the work environment?

10. A serious problem in designing curricula using the concepts of transferable skills and occupational adaptability is deciding what to include. It is not possible to teach all the skills within all the contexts. Putting all of the skills and contexts in matrix format could result in many thousands of matrix cells. How can educators sample from this myriad of cells in best preparing the "educated person"? There is not enough time to teach everything, so a sample must be selected. What are the sampling rules? What is the relative importance of each skill and context area? Is it better to sample from one context in depth or to sample more sparingly from any one context but cover more contexts? Conversely, Short noted that specific occupations (sub-categories of the production context) must be considered, but care should also be taken to remember the overarching production context, which is, for the work environment, the labor market.

11. One of the limitations of making lists of contexts or skills is that each context or skill tends to look equal in terms of importance and in the time and effort required to teach and learn it. Lists are unidimensional; they do not reflect the interrelationships among items on the list — the richness and complexity of what must be learned.

12. In teaching for transferable skills, the teacher must not only be concerned with the two dimensions of Skill and Context, but also with selecting the teaching method (instruction) most appropriate for these dimensions. Springer suggests that the teacher's responsibilities are even more complicated because people have different learning styles. Another complication is that individual's perceptions and needs are often changing. So too with occupations, as evidenced by Peterson's reference to job redesign as a part of corporate reorganization. The challenge for teachers is in "keeping track" of all the changes in students' skill repertoires, learning styles, and wants, as well as the many occupational requirements, especially as the rates of change may be increasing. Is this whole complex too difficult to teach to teachers? Are the expectations too high? Can, for instance, a vocational teacher drawn from industry be expected to handle this responsibility with 20 clock-hours of preservice instruction? How long would it take? What is the appropriate process to use in preparing teachers to teach for occupational adaptability?

13. Staying with the issue of teaching methods, vocational education teachers have a wider variety of tools than most other teachers to help make the connection between skill and context and yet tailor the instruction to the student. These tools include classrooms, shops, laboratories, supervised experience programs, youth organizations, adult programs, summer programs, and cooperative training experiences. Barton noted that there may be wide differences among students in their knowledge and experience with the labor market (work context). Therefore, it may be most efficient to deploy the teaching tools in different combinations, depending on the characteristics of the student. The point is that perhaps more attention should be given to finding out about incoming students, including their homes and any work experiences. The effort may pay off well in selecting appropriate teaching strategies.

14. How far is it necessary to subdivide skill and context for effective planning, delivery, and evaluation of instruction? Is clustering effective? Might clustering be done on different dimensions for the above three aspects of instruction? How much detail is lost in clustering — or is it the very detail that makes the instruction relevant and the skills useful? One of the effects of the size of clusters may be on the range of occupations in which the student is most mobile. The difficulty suggested by both Peterson and Springer is that by the time instruction is being planned for adults, they have each had quite unique occupational and educational experiences. Their needs to prepare for occupational adaptability and transfer are very individualized. In order for instruction to be useful to them, it must be as specific to their situation as possible. How can instruction be delivered efficiently, with limited resources, and yet be individually specific? As Peterson stated, more may already be known about designing the instruction process than it is financially possible to apply.

15. Peterson pointed out that in preparing women for non-technical occupations, the foremost competence needed is to have *transfer* skills. Transfer skills are a special group of skills. They are the *process skills* that help a person move from one context to another. They are especially important in occupational moves. They are akin to decision making and learning how to learn. Some examples mentioned by various symposium participants were: job integration, coping skills, ability to stand back and observe, taking time to evaluate what has been learned that can be used in another role, self-confidence, and awareness. It seems these are the most generalizable of the transferable skills, and they may be the most important to everyone. If the concern is to identify implications for the practice of teaching, it may be well to start with the transfer skills. Perhaps there are fewer *ways of doing* than there are *things to do;* that is, the number of transfer (processing) skills are few as compared to the number of contexts (task endeavors) in which they are used.

16. Is the whole more than the sum of the parts? Can an educated person be developed simply by teaching a good share of the cells in the Skills-by-Contexts matrix? Or, is there a hybridization effect that takes place among cells — a need to put it all together, and thereby produce what might be called the truly practical person? This concept seemed to be demonstrated in Short's learning experience concerning the voting information service. The person who can really do that well, can accommodate all the possible situations and do it smoothly, has more than a long list of skills or contexts. Somehow those have been combined into an interactive, dynamic mechanism that is more than the sum of the pieces. How is this hybridization process accomplished within the learner? What are the implications for curriculum development?

17. What is the most appropriate focus for vocational education programs in the Skills-by-Contexts matrix? Are there certain skills best suited for focus by vocational education? Vocational educators have always implied that the "doing," or physical, skills were their specialty. Certainly the economic context is more appropriate relative to religious, political, and leisure contexts. Focus on the consumption context within the economic context and the familial context is not always clear in vocational education policy and practice. However, using the concepts of transferable skills and occupational adaptability provides a useful conceptual structure for explicating the role of vocational education and its relationship to the whole of education.

18. Perhaps evaluations of the transfer of skills acquired in vocational education, particularly as they are applied in the work context, have to be more longitudinal in nature. Barton showed that it isn't until about age 20 that industry hires persons into occupations that have career ladders for advancement. Before that time, high school graduates are in "youth" jobs and a "casual" labor market. It therefore makes little sense to do follow-up studies of high school students one to two years after leaving school, if the focus is on evaluating occupational adaptability, particularly as it relates to "adult" jobs and vertical advancement. Another implication is that more study is needed on the process of transition from youth jobs to adult jobs. Is this a particularly stressful transition? Can education be of assistance? Can and should the transition be moved up to an earlier age?

19. The previous observation leads to a question concerning the role of education, particularly of vocational education, in changing not only the student but also the work context. Might not the occupational task analyses used as a basis to develop curricula also be used to assist employers in redesigning their jobs? Should vocational education accept the responsibility for advancing this idea? Vocational education might also have a role in influencing other educators to see the relevance of the concept of transferable skills, and demonstrate how transfer can more effectively be taught in schools.

Summary

As stated earlier, my purpose was to synthesize and provide reactions to the presentations made in this symposium. My perspective was that of teacher/educator and researcher in the field of vocational education. The reactions from this one perspective are certainly not exhaustive, nor would they be normative. However, I hope they are sufficiently diverse and provocative to stimulate the discussion, among other interested persons, that the concepts of transferable skills and occupational adaptability deserve.

In my judgment, this symposium is part of an excellent example of programmatic research. It has involved a wide variety of efforts over a long period of time, focusing on providing new knowledge and implications for practice based on particular problems or concepts — in this case, transferable skills and occupational adaptability. There are relatively few such examples of program-

matic research in vocational education. I hope this particular effort can continue. Its implications for practice are just now becoming apparent. Several more years of effort will be needed to bring these implications into broad, practical use, and to bring more knowledge to bear on the many unanswered questions. I "second" what Peterson suggested — there is a need to expose this important concept and its implications to educators and employers.

POSTSCRIPT: EMERGING ISSUES

A number of concurrent project activities have added to and expanded the ideas and issues discussed by the symposium presenters since the presentation at AVA. Significant among them are:

- The view of adaptability as problem-solving seems to take a short-term, critical-incident approach, when, in fact, occupational adaptability may involve a series of problem-solving activities occurring over a long time and aimed at achieving adaptation in a much broader sense. For instance, an adaptation to a change in the work shift may involve, superficially, only a few problem-solving responses; change the setting on the alarm clock; get used to sleeping, eating, and pursuing leisure activities on a different schedule; possibly interacting with a different set of coworkers and supervisors; and so forth. Adaptation to a transfer to a different plant, or a promotion, or a job change, or reentry into work after time away, all require more longitudinal and substantial adaptations, such as moving to another geographic location; assuming new roles; learning new work requirements and procedures; etc. — all of which can be broken down into series of smaller problem-solving and decision-making activities. More thinking needs to be done about what is really meant when "occupational adaptability" is discussed.

- The investigation of learning styles may have important implications for transfer of skills and occupational adaptability. For instance, research into learning styles has uncovered students who seem to learn equally well with different ways of teaching. Are these so-called "flexible" learners more skilled in *transfer* than students who restrict their learning styles to one or a few modes? Are the flexible students more adaptable, in the sense that we are investigating? If so, what are the implications for teaching transfer and adaptability to those whose learning styles are more restrictive? What is the relationship of learning styles to learning-to-learn skills, and how do those relate to an individual's capacity to adapt to changes in work over a lifetime?

- The issue of skill perishability relates not only to the delay between learning in school and application in the first adult-level job, but to situations of reentry into the labor market (such as happens to displaced homemakers), job and career changes, and second (post-retirement) careers. The problems of the transfer of learning, including what is termed indirect transfer and negative transfer, need to be examined along with skill perishability in order to understand the methodologies and limitations of trying to teach for transfer from school to work.

- Because the skills, knowledge, and attitudes that are operational in occupational adaptability could be an individual matter, the requirements and expectations regarding it will not only differ as a function of age-as-position-in-life, but as a function of other individual characteristics, including value indoctrination (e.g., the influence of family) and significant personal events. Changes in the exterior factors (e.g., societal) obviously also impinge on an individual's opportunities, motivations, and limitations to behave in an adaptive fashion. How can all the factors, internal and external, be identified, evaluated, and prioritized *for each individual in each adaptive situation?*

- There are differing value systems relating to adaptiveness versus maladaptiveness. Should adaptability be viewed in terms of a worker's satisfaction with work and/or the work setting? Should the requirements of the employer be the primary criterion? Are the two value systems compatible? Are there some other criteria against which to assess successful or unsuccessful adaptability?

- Assuming that occupational adaptability and skill transfer can be taught, secondary, vocational, and postsecondary formal education may not be the best arenas in which to try to conduct immediate research and development efforts. Not only is the educational "system" likely to be resistant to such changes, it may not be in the most developmentally influential position to help people to expand and take greater responsibility in using their learning styles and problem-solving capabilities. Adult education, in its many contexts and degrees of formality, may be more responsive, as well as more conducive, to implementing research into the teaching of occupational adaptability and transfer of skills.

The Transferable Skills project is currently in process of examining directions for research suggested by these issues.

REPORTS ON OCCUPATIONALLY TRANSFERABLE SKILLS

McKinlay, B. *Characteristics of jobs that are considered common: Review of literature and research* (Info. Series No. 102), 1976. ($3.80)

A review of various approaches for classifying or clustering jobs, and their use in (a) describing the elements of commonality involved when people make career changes, and (b) understanding better the concepts of occupational adaptability and skill transfer.

Altman, J.W. *Transferability of vocational skills: Review of literature and research* (Info. Series No. 103), 1976. ($3.80)

A review of what is known about the transferability of occupational skills, describing the process or the facilitators of skill transfer.

Sjogren, D. *Occupationally transferable skills and characteristics: Review of literature and research* (Info. Series No. 105), 1977. ($2.80)

A review of what is known about the range of occupation-related skills and characteristics that could be considered transferable from one occupation to another, describing those transferable skills which are teachable in secondary and postsecondary career preparation programs.

Ashley, W.L. *Occupational information resources: A catalog of data bases and classification schemes* (Info. Series No. 104), 1977. ($18.20)

A quick and concise reference to the content of 55 existing occupational data bases and 24 job classification schemes. Abstracts of each data base and classification scheme include such information as: identification, investigator, location, documentation, access, design information, subject variables, occupation variables, and organization variables.

Wiant, A.A. *Transferable skills: The employer's viewpoint* (Info. Series No. 126), 1977. ($3.25)

A report of the views expressed in nine meetings across the country by groups of local community and business representatives concerning the types of transferable skills required and useful in their work settings and how a better understanding of transferable skills could improve training and occupational adaptability.

Miguel, R.J. *Developing skills for occupational transferability: Insights gained from selected programs* (Info. Series No. 125), 1977. ($3.80)

A report of clues and suggestions gained in the review of 14 existing training programs, with recommendations for practice which appear to have been successful in recognizing skill transfer and taking advantage of an individual's prior skills and experience.

Ashley, W.L., & Ammerman, H.L. *Identifying transferable skills: A task classification approach* (R&D Series No. 146), 1977.

A report of an exploratory study designed to test the usefulness of three classification schemes in identifying the transferable characteristics of tasks in diverse occupations.

Pratzner, F.C. *Occupational adaptability and transferable skills* (Info. Series No. 129), 1977. ($6.25)

A summary final report, presenting and discussing an array of issues encountered in the various project activities, and offering recommendations.

Selz, N.A., & Ashley, W.L. *Teaching for transfer: A perspective for practitioners* (Info. Series No. 141), 1978. ($2.35)

An informal discussion of the need for teachers and trainers to give more attention to developing transferability and transferable skills in students for learning and life performance applications. Practical suggestions and techniques for improving the capacity of students to transfer learned skills and knowledge to new situations are given.

Brickell, H.M., & Paul, R.H. *Minimum competencies and transferable skills: What can be learned from the two movements* (Info. Series No. 142), 1978. ($5.10)

A report comparing and contrasting potential impact of the transferable skills and minimum competency testing movements on school programs, staff, and students. Key questions and alternative strategies are presented to assist educational planners and administrators in formulating policy and establishing promotion or completion criteria in secondary and postsecondary education.

THE FOLLOWING REPORTS WILL BE AVAILABLE IN 1980:

Ashley, W.L., Laitman-Ashley, N.M., and Faddis, C.R. (Eds.) *Occupational adaptability: Perspectives on tomorrow's careers* (Info. Series No. 189), 1979.

Proceedings from a national symposium. The topics focused on how training for adaptability can increase the use of human resources in the labor force.

Selz, N. (Ed.) *Adult learning: Implications for research and policy in the eighties*, 1979.

Proceedings from a national symposium on adult learning. Topics include state of the art, research into practice, policy implementation, and future directions.

Wiant, A.A. *Self-assessment for career change: Does it really work? Summary report of a follow-up study* (Info. Series No. 191), 1979.

An analysis of the impact of self-assessment on one's subsequent employment experience. The particular assessment technique studied is one intended to help identify those skill attributes which have provided satisfaction in various life experiences. Outcome measures included skill utilization and job satisfaction.

Selz, N.A., and Jones, J.S. *Functional competencies in occupational adaptability and consumer economics*, 1979.

Perceptions of national adult samples are reported. Document includes where competencies should be taught —at home, at school, on-the-job, self-taught—and how important these competencies are in successful work and life activities.

Kirby, P. *Cognitive style, learning style, and transfer skill acquisition*, 1979.

A review and synthesis of the literature in adult learning styles, as they relate to the acquisition of transfer skills.

Knapp, J.E. *Assessing transfer skills*, 1979.

A review of traditional and non-traditional assessment with respect to the assessment of transfer skills.

Sommers, D. *Empirical evidence on occupational mobility* (Info. Series No. 193), 1979.

A review and synthesis of the literature on the characteristics of occupationally mobile workers and their jobs.

Laitman-Ashley, N.M. (Ed.) *Women and work: Paths to power* (Info. Series No. 190), 1979.

Proceedings from a national symposium that offer perspectives on women in the work force. Topics will cover five major transition points that any person can experience in a lifetime.

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