



Learning strategies of Alberta college students
by Rita Charlene Kolody

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
© Copyright by Rita Charlene Kolody (1997)

Abstract:

Increasingly adult educators are turning to the concept of learning strategies as a means of exploring individual differences in learning. Learners use various strategies to accomplish their learning needs. Using the Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS), researchers have found that various groups of learners can be distinguished by learning strategies. This study expanded the learning strategies investigation to adult learners at five two-year colleges in Alberta. The purpose of the study was to identify the learning strategies used by students at these colleges, to investigate the relationship between learning strategies and demographic variables, and to explore patterns of learning of distinct groups that existed in the sample.

The sample included 1,143 learners. Differences in the use of learning strategies were found when the participants were grouped according to gender, type of program, age, and grade point level. Several multivariate analyses using discriminant analysis failed to produce any powerful functions although weak differences were found in the areas of grades, gender, program, and age.

The multivariate technique of cluster analysis, however, did produce a solution with five clear and distinct clusters. Navigators use successful role models to develop their formula for success and are focused learners who chart a course and follow it. Monitors are comparative learners who measure their success according to others' standards. Networkers are learners who constantly adjust their learning strategies and make heavy use of external aids and human resources. Critical Thinkers are the learners who make heavy use of all critical thinking strategies and of memory applications. Engagers are the passionate learners who love to learn and learn with feeling.

The two major conclusions from this study are that distinct groups of learners exist in adult learning situations and that learning strategies are not linked to various demographic variables. Imposing sense upon the data through preconceived groupings with discriminant analysis was not the best way to uncover differences in uses of learning strategies. Instead, cluster analysis and supportive qualitative techniques which allow the data to expose its own patterns were more productive. Based upon the groups found in this way, recommendations were made for teachers, students, and researchers.

LEARNING STRATEGIES OF ALBERTA
COLLEGE STUDENTS

by

Rita Charlene Kolody

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Education

MONTANA STATE UNIVERSITY--BOZEMAN
Bozeman, Montana

April 1997

D378
K8344

APPROVAL

of a thesis submitted by

Rita Charlene Kolody

This thesis has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

Gary J. Conti
Dr. Gary J. Conti
Chairperson, Graduate Committee

4-17-97
Date

Approved for the Major Department

Gloria Gregg
Dr. Gloria Gregg
Head, Major Department

April 18, 1997
Date

Approved for the College of Graduate Studies

Robert L. Brown
Dr. Robert L. Brown
Graduate Dean

4/27/97
Date

GOLD CREST

25% COTTON



STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a doctoral degree at Montana State University--Bozeman, I agree that the Library shall make it available to borrowers under rules of the Library. I further agree that copying of this thesis is allowable only for scholarly purposes, consistent with "fair use" as prescribed in the U.S. Copyright Law. Requests for extensive copying or reproduction of this thesis should be referred to University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106, to whom I have granted "the exclusive right to reproduce and distribute my dissertation for sale in and from microform or electronic format, along with the right to reproduce and distribute my abstract in any format in whole or in part."

Signature *Debra Charlene Kolody*
Date April 10, 1997

ACKNOWLEDGEMENTS

My utmost appreciation to Dr. Gary Conti, my graduate chair, for his expert guidance and encouragement from the inception of this project through its completion. His wisdom, friendship, and regard for professional development were fundamental to my success. I also wish to thank my graduate committee, Dr. R. Fellenz, Dr. D. Herbster, Dr. W. Lieshoff, Dr. N. Millikin, and Ray Babcock, for their insight and valued direction.

A special note of gratitude to my husband, Gary, and children, Christopher, Sara, and Jameson, for their treasured love, patience, and support. Love also to my parents, Neil and June Judkins, whose precious lessons in life initiated a quest for discovery.

Thank you to Linda for technical support, to the research assistants at Grande Prairie College, Keyano College, Mount Royal College, and Red Deer College for coordinating the study at their sites, and to the many faculty and students at each of the five colleges who participated in the study. Also, much appreciation to my colleagues at Medicine Hat College and in the MSU Adult Education Program for their support of my research.

TABLE OF CONTENTS

	Page
LIST OF TABLES	viii
ABSTRACT	ix
1. INTRODUCTION	1
Adult Learning	1
Learning Strategies	4
Reflective Practice and Canadian Colleges	7
Statement of the Problem	10
Purpose	11
Research Questions	12
Limitations of the Study	13
Definition of Terms	13
2. REVIEW OF THE LITERATURE	16
Adult Learning	16
Four Orientations to Learning	18
Principles of Effective Practice	21
Learning Strategies	24
Metacognition Strategies	27
Planning	28
Monitoring	28
Adjusting	29
Metamotivation Strategies	30
Attention	31
Reward/Enjoyment	32
Confidence	33
Memory Strategies	34
Organization	35
External Aids	36
Memory Application	37
Critical Thinking Strategies	37
Testing Assumptions	38
Generating Alternatives	38
Conditional Acceptance	39
Resource Management Strategies	39
Identification	41
Critical Use	41
Human Resources	41
Canadian Community Colleges	42

TABLE OF CONTENTS--Continued

	Page
3. METHODS AND PROCEDURES	47
Introduction	47
Population	49
Sampling	50
Instrument	51
Validity	52
Reliability	55
Procedures for Data Collection	55
Overview of Data Analysis	57
4. QUANTITATIVE FINDINGS	61
Statistical Profile of the Learners	63
Discriminant Analysis	68
Grades	71
Gender	77
Program	80
Age	83
Summary	87
5. IDENTIFYING GROUPS OF LEARNERS	89
Cluster Analysis	89
ANOVA of the Clusters	91
Interview Data	95
Navigators	98
Monitors	103
Critical Thinkers	109
Engagers	114
Networkers	120
Discriminant Analysis on Clusters	123
Function 1	124
Function 2	126
Function 3	128
Function 4	129

TABLE OF CONTENTS--Continued

	Page
6. CONCLUSIONS & RECOMMENDATIONS	132
Summary	132
Profiles of Learners	133
Discriminant Analysis	134
Grades	134
Gender	135
Program	135
Age	136
Cluster Analysis	136
Conclusions	137
Implications and Recommendations	140
Teaching	140
Teaching Navigators	142
Teaching Monitors	143
Teaching Critical Thinkers	143
Teaching Engagers	144
Teaching Networkers	144
Students	145
Research	146
Epilogue	149
REFERENCES	151

LIST OF TABLES

Table	Page
1. Number of Respondents from Each Participating College	51
2. Age Frequency of Participants	64
3. Program Frequency of Participants	65
4. Distribution of Grade Point Averages	65
5. Ethnicity of Participants	66
6. Means of Learning Strategies Areas of SKILLS Used by Participants	67
7. Means of Individual Learning Strategies of SKILLS Used by Participants	68
8. Cluster Frequency Distribution	91
9. ANOVA of Significantly Different Learning Strategies in Clusters	92
10. ANOVA of Demographic Variables among Clusters	93
11. Means of Cluster Groupings on Learning Strategies and Demographic Variables	95
12. Participants of Qualitative Interviews	97

ABSTRACT

Increasingly adult educators are turning to the concept of learning strategies as a means of exploring individual differences in learning. Learners use various strategies to accomplish their learning needs. Using the Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS), researchers have found that various groups of learners can be distinguished by learning strategies. This study expanded the learning strategies investigation to adult learners at five two-year colleges in Alberta. The purpose of the study was to identify the learning strategies used by students at these colleges, to investigate the relationship between learning strategies and demographic variables, and to explore patterns of learning of distinct groups that existed in the sample.

The sample included 1,143 learners. Differences in the use of learning strategies were found when the participants were grouped according to gender, type of program, age, and grade point level. Several multivariate analyses using discriminant analysis failed to produce any powerful functions although weak differences were found in the areas of grades, gender, program, and age.

The multivariate technique of cluster analysis, however, did produce a solution with five clear and distinct clusters. Navigators use successful role models to develop their formula for success and are focused learners who chart a course and follow it. Monitors are comparative learners who measure their success according to others' standards. Networkers are learners who constantly adjust their learning strategies and make heavy use of external aids and human resources. Critical Thinkers are the learners who make heavy use of all critical thinking strategies and of memory applications. Engagers are the passionate learners who love to learn and learn with feeling.

The two major conclusions from this study are that distinct groups of learners exist in adult learning situations and that learning strategies are not linked to various demographic variables. Imposing sense upon the data through preconceived groupings with discriminant analysis was not the best way to uncover differences in uses of learning strategies. Instead, cluster analysis and supportive qualitative techniques which allow the data to expose its own patterns were more productive. Based upon the groups found in this way, recommendations were made for teachers, students, and researchers.

CHAPTER 1

INTRODUCTION

Adult Learning

Despite great efforts made by an instructor to create a stimulating classroom environment with varied teaching strategies, the educator has remarkably little control over the learning. Although Knowles (1970) asserts that "the behavior of the teacher probably influences the character of the learning climate more than any other single factor" (p. 42), it is ultimately the learner who determines the level of acquisition, interpretation, or assimilation of material. "Without taking away from the important role played by the teacher, . . . what the student does is actually more important in determining what is learned than what the teacher does" (Shuell, 1986, p. 429). Contributing factors that govern this learning may be the student's past experiences, content meaningful to the individual learner, willingness to become involved with the subject matter, and the set of "tools" that the student possesses to enhance learning. Therefore, to facilitate a truly successful adult learning experience, a teacher must skillfully direct the

focus away from the role of the instructor and toward that of the learner.

This learner-centered approach has been the locus of change as the field of adult education has evolved over the past 15 years to focus on adult learning rather than on adult education. J. Roby Kidd (1973) viewed this new emphasis on learning as the implication that adult education was finally moving from a field of practice toward a field of study.

As a field of practice, the emphasis in research and conceptual development had been on providing services, with learning viewed simply as one component of educational programs. But a shift to a field of study with the individual learner as the central concern opened whole new realms, such as self-directedness and individual development, to the field. (Fellenz & Conti, 1989, p. 1)

The very term, adult education, suggests a focus on the educator; however, adult learning implies that the emphasis be directed to the learner. In 1983, Peter Jarvis recognized the beginning of this change and affirmed that "the aims of the educational process are about the learners rather than about the profession or the wider society" (p. 41).

Adult learning theories often reflect the philosophy of Thomas Paine, an 18th century political writer who is recognized as a leading influence on the Age of Revolution. His works exhibit his belief in natural reason and natural rights, political equality, tolerance, civil liberties, and the dignity of man (Aldridge, 1984). Although these ideals

were considered revolutionary at the end of the 18th century, they are the very ideals being applied today in adult education. The empowerment of today's adult learners to become knowledgeable and involved with their own learning is the vision that Paine saw for all people. "It is only by tracing things to their origin that we can gain rightful ideas of them, and it is by gaining such ideas that we discover the boundary that divides right from wrong, and teaches every man to know his own" (cited in Adams, 1975, p. 215).

Malcolm Knowles has further developed this learner-centered concept, which has gained much acceptance in the field of adult education. He coined the term "andragogy" for this practice.

It has come to mean an educational mode in which the teacher is viewed as a facilitator of learning. Students are perceived to be self-directed. The relationship between teacher and student is personal and trusting. The climate for learning is informal and collaborative. Teaching . . . can be described as dialogical. (Grubbs, 1981, pp. 5-6)

A major part of the definition of andragogy stresses the growth of self-direction in learning and the use of experiences of the learner in the educational process (Davenport, 1987, p. 6; Knowles, 1968).

Andragogy is based upon student-centered, self-directed methodologies. As students better understand their own learning strategies, the more empowered they are to enhance

their personal learning. "Trends in adult education and cognitive psychology that advance the understanding of the individuality of learning experiences and that promote learner self-knowledge and control of personal perceptions and judgements provide for potential empowerment of the individual" (Fellenz & Conti, 1989, p. 23).

Smith (1982) explored the concept of learning how to learn and concluded that:

A central task of learning how to learn is developing awareness of oneself as a learner Self understanding links directly to learning how to learn when learners become sensitive to, and in other words, more aware of themselves as learners. . . . Learning how to learn involves a set of processes in which the individual learner acts at least partially as his own manager of change, and his focus of change is his own self-concept and learning processes. (p. 57)

This requires that the learner be able to conceptualize his own learning process, be able to pay some attention to how he goes about learning, and thrust himself into managing the process (p. 30). To become successful in this process, learners must also recognize distinct strategies, which are specific to their individual learning patterns and behaviors.

Learning Strategies

Educators have long searched for a definitive explanation for the distinctions between individual learners. Intelligence, cognition, teaching theories, and

learning styles have all been examined, yet none has accounted for the various approaches learners take to accomplish their specific learning needs. Consequently, adult educators are increasingly turning to the concept of learning strategies as a means of exploring these individual differences.

Regardless of the type of setting, learners use various strategies to accomplish their learning needs. Learning strategies are those techniques or specialized skills that the learner has developed to use in both formal and informal learning situations (McKeachie, 1980). While learning styles refer to the inherent ways that people process information, learning strategies deal with the way people approach specific learning situations (Conti & Kolody, 1995).

"Recent research on teaching and learning has focused on the active role of the learner in student achievement" (McKeachie, 1980, p. 23). Techniques, tactics, and methods which enhance effective learning have been called learning strategies. The strategies are external behaviours developed by an individual through experience with learning which the learner "elects to use in order to accomplish a learning task" (Fellenz & Conti, 1989, p. 7). The learning strategies a student uses can have an effect upon their academic achievement (Mayer, 1987).

Researchers in the fields of education and psychology have noted the importance of the concept of learning

strategies. McKeachie (1980) and Weinstein, Zimmerman, and Palmer (1988) have advocated an approach to learning which incorporates teaching a variety of skills thought to be linked to academic performance. McKeachie (1980) has investigated links between types of attention or concentration; memory aids such as grouping, automatization, and visualizing; the use of elaboration as a memory aid; and the vital role of motivation in learning. Weinstein et al. (1988) and Mayer (1987) have researched how students process information and other behaviours learners engage in during learning. Other researchers have focused on the role of learning strategies used in real-life learning situations (Fellenz & Conti, 1989).

Learning strategies can be divided into five component areas (Conti & Fellenz, 1991; Fellenz & Conti, 1989). These are Metacognition, Metamotivation, Memory, Critical Thinking, and Management of Resources. Metacognition can be thought of as the executive control of learning. It is composed of planning how to go about learning, monitoring how well the plan is being carried out, and adjusting the plan depending on progress toward the learning goal. Metamotivation deals with how individuals build and maintain internal motivation to complete learning tasks. Memory as it relates to learning strategies involves (a) how a learner organizes new information into knowledge already known, (b) the use of external memory aids such as item lists, and

(c) self-knowledge about personal memory and knowledge of strategies that are useful in remembering (Fellenz, 1993, pp. 5-8). Critical thinking involves how one discriminates and reflects upon learning material. Management of learning resources relates to how learners identify and critically use appropriate sources of information. All of these aspects of learning strategies are thought to play an integral part in how much and how well students achieve in learning situations (McKeachie, 1980).

Since the recent development of the Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS), researchers such as Hill (1992), Yabui (1993), Hays (1995), Conti and Kolody (1995), Kolody and Conti (1996), and Lockwood (1997) have found that various groups of learners can be distinguished by the learning strategies which they use. The metamorphosis experienced in the field of adult learning over the past 15 years not only has provided the basis that allows the identification of these distinct groups, but it has also provided the foundation and the need for further study to determine the reasons for these differences between groups of learners.

Reflective Practice and Canadian Colleges

To date, the majority of the research using SKILLS has been conducted in the United States. Many of these studies have involved various college environments (Hays 1995; Hill,

1992). However, demographic populations of the American college differ from those found in Canada. Can one assume that these findings of those studies conducted at an American college are generalizable to two-year Canadian college students? Too often, decisions made in Canada are dependent upon information generated from research conducted in America. Schon (1987) suggests that professionals no longer need to rely upon others' research findings. As "reflective practitioners," they should be creating their own knowledge in their specific fields of expertise.

Schon's model of professional knowledge emanates from "the reflective practitioner"--one whose practice is based upon two processes that he has coined as "knowing-in-action" and "reflection-in-action." His model of knowing-in-action assumes that knowing is in the actions of professionals, and he describes it as "the characteristic mode of ordinary practical knowledge" (Schon, 1983, p. 54). Based on Houle's (1980) work in adult education in various professions, Cervero (1988) supports Schon's opinion that the research generated by universities is an important source of information for knowing-in-action but that it must be incorporated with reflection-in-action. Otherwise, it has little chance of becoming part of a practitioner's repertoire (p. 45). Schon's (1983) suggestion for "bridging the two worlds" of applied science and reflection-in-action

is to create a setting in which "practitioners learn to reflect on their own tacit theories of the phenomena of practice, in the presence of representatives of those disciplines" (p. 32). The ideal arrangement would then be to have practitioners in the field conducting their own research and creating their own knowledge in cooperation with experts in that discipline. "The two kinds of theories should be made to engage each other, not only to help academicians exploit practice as material for basic research but also to encourage researchers in academy and practice to learn from each other" (p. 321).

As the literature base on SKILLS increases, reflective practitioners in Canada should, therefore, generate their own knowledge base. This can be done by looking at what makes the two-year Canadian colleges unique, by conducting studies of Canadian college students that identify various groups of learners, and by examining the reasons for these differences (Conti & Kolody, 1995).

Despite their diversity, the academic curricula of Canadian colleges are organized into five basic functions; collegiate, career, general, compensatory or remedial, and community education. Although institutions vary in emphasis, most colleges offer some form of each function. As vocational education is intended to develop skills and related knowledge to prepare for employment, general education emphasizes critical thinking, developing values,

understanding traditions, respecting diverse cultures, and applying acquired knowledge throughout life.

As the faculty emphasis of Canadian colleges is upon teaching, institutions are committed to professional development that will help staff improve instruction and student learning. The Alberta College and Institute Faculty Association (ACIFA) is an association of autonomous faculty associations of the 13 public colleges and technical institutes throughout Alberta, and ACIFA represents over 4,000 faculty members. Through a cooperative venture between ACIFA and the research resources of Montana State University and by building upon a learning strategies study initiated at the Medicine Hat College (Conti & Kolody, 1995), reflective practitioners from five colleges throughout the province are engaged in "creating new knowledge" by participating in a province-wide, field-based study examining the learning strategies used specifically by college students in Alberta (Kolody & Conti, 1996).

Statement of the Problem

The goal of adult educators is to optimize the level of their students' learning. As the learning process is better understood, adult educators can be more successful at unlocking the mystery of how individuals learn. If teachers can help learners understand their personal learning process, learners are then empowered to take this knowledge

of their learning and apply it to lifelong learning experiences. "An appreciation of one's learning style, the development of strategies that promote learning, and an insight into metacognitive processes enable people to exert control over learning processes and outcomes" (Fellenz & Conti, 1989, p. 23).

The examination of learning strategies provides teachers with a means to increase their effectiveness in the teaching-learning process. Learning strategies are "the techniques and skills that an individual elects to use in order to accomplish a specific learning task. . . . Such strategies vary by individual and by learning objective" (Fellenz & Conti, 1989, pp. 7-8).

Prior to this study, most of the research on learning strategies has been conducted in the United States. However, as Schon suggests, Canadian educators no longer need to rely on a generic profile of students and the strategies which they use. Reflective practitioners in Canada can create their own knowledge base by examining the specific learning strategies of their own students.

Purpose

The purpose of this study was (a) to identify the learning strategies of adult learners at two-year colleges in Alberta; (b) to investigate the relationship of these learning strategies to academic success, gender, age, and

program of study; and (c) to explore patterns of learning of distinctive groups of learners that may exist. Once distinct groups of learners were identified, the reasons for these differences were then investigated by qualitative and quantitative means to describe these groups.

Research Questions

This study investigated the learning strategies used in real-life learning situations by Canadian college students. The use of specific learning strategies was measured with SKILLS. To accomplish this, the following research questions were asked.

1. What is the learning strategies profile of students in the Canadian two-year colleges?
2. Among Canadian college students, is it possible to use learning strategies scores as measured with SKILLS to discriminate between the most successful learners and least successful learners as measured by their grade point average?
3. Among Canadian college students, is it possible to use learning strategies scores as measured with SKILLS to discriminate between groups formulated by the following demographic variables: gender, age, and program of study?
4. Is it possible to identify distinct clusters of learners in Canadian colleges using SKILLS?
5. If distinct groups of learners exist, how can these clusters be described?
6. If distinct groups of learners exist, what differentiates one group from another?

Limitations of the Study

Because of the confidentiality of the study due to the release of the students' GPA by the respective registrar, individual institutions were reluctant to release the names of students for the qualitative phase of the study, even when it was assured there was no wish to tie the student's name to the GPA. Therefore, it was only possible to secure participants for the qualitative phase of the study at Medicine Hat College (MHC). Further, since programs at Medicine Hat College are only one or two years in duration, many of those students who had participated in the quantitative study at MHC were no longer students and were difficult to locate when the qualitative phase was conducted the following year.

Definition of Terms

ACIFA: Acronym for Alberta Colleges and Institutes Faculty Association. This is the collective organization at a provincial level with an appointed representative from each of the individual college and faculty associations.

Community Colleges and Institutes of Technology: Non-degree-granting institutions that offer a variety of one, two, or three year training programs. Most community colleges are public institutions stressing the "open door policy" and financially supported largely by governments. Programs range from adult basic education to university transfer courses, and they include vocational technical training and specialized training for semi-professional jobs in such fields as agriculture, industry and engineering, health services, business, and public service.

Critical Thinkers: Those learners described in this study as those who rely heavily on a variety of traditional critical thinking skills.

Critical Thinking: "Identifying and challenging assumptions, challenging importance of context, imagining and exploring alternatives, and reflective scepticism" (Brookfield, 1987, p. 12).

Engagers: Those learners described in this study as passionate learners who involve all five senses in their learning and learn best when they are actively engaged in a meaningful manner with the learning task.

GPA (Grade Point Average): The term commonly used in schools which refers to the overall average of all of the grades that a student has received.

Learning Strategies: "The techniques and skills that an individual elects to use in order to accomplish a specific learning task. Such strategies vary by individual and by learning objective. Often they are so customary to learners that they are given little thought; at other times much deliberation occurs before a learning strategy is selected for a specific learning task" (Fellenz & Conti, 1988, p. 1).

Memory: Learning strategies which help adults in remembering in real-life learning situations. These include rehearsal of information, organization and elaboration of information, use of external aids, and the application of self-knowledge about memory and use of mnemonic techniques (Fellenz, 1990, p. 5-9).

Metacognition: "Thinking about the process of learning an emphasizing self-regulatory tactics to insure success in the learning endeavor" (Fellenz & Conti, 1988, p. 2).

Metamotivation: "Tactics and techniques used by the learner to provide internal impetus in accomplishing learning tasks." These are based on a model developed by Keller (1987) which emphasizes focusing attention, anticipating reward, fostering confidence, and enjoying learning activities.

Monitors: Those learners described in this study as being cognizant of their learning progress, who closely monitor their learning, and who learn best from example.

Navigators: Those learners described in this study as focused learners who chart a course for learning and follow it. These learners rely heavily on the learning strategy of planning.

Networkers: Those learners described in this study as learners who make frequent use of human resources and integrate others into the social and political process of learning.

Post-secondary Institutions: A wide range of institutions including universities, public and private colleges, and institutes of technology that offer programs to those having completed grade 12 or its equivalency.

Resource Management: The "identification of appropriate resources, critical use of such sources, and the use of human resources in learning" (Fellenz & Conti, 1993, p. 3).

SKILLS: An acronym for the Self-Knowledge Inventory of Lifelong Learning Strategies. This is a learning strategies inventory with established validity and reliability which asks respondents to rate 15 learning strategies in scenarios commonly found in everyday life and which call for a learning effort on the part of the respondent. Participants in this study responded to four scenarios.

Technical Training: Instruction that "combines development of skills with scientific and technological studies" (Campbell, 1971). For the purpose of this study, "technical training" is used interchangeably with the terms "technological" and "vocational."

Tertiary: Post-secondary institutions possessing either degree-granting or non-degree-granting status (Campbell, 1971).

Transfer: Studies that provide credits toward a baccalaureate degree.

CHAPTER 2

REVIEW OF THE LITERATURE

Adult Learning

The learning process has captivated the interest of scholars, social scientists, psychologists, and educators for centuries. Yet with centuries of research and study on the process of learning, the definition of the concept still remains nebulous. Gagne (1970) offers a simplistic yet somewhat inadequate definition of learning as "a change in human disposition or capability, which can be retained, and which is not simply ascribable to the process of growth." Mezirow (1990) more comprehensively defines learning as the process of making a new or revised interpretation of the meaning of an experience, which guides subsequent understanding, appreciation, and action. Rather than attempt to define learning, it may be more practical to look at the results or the outcomes of learning. Gagne (1970) recognizes the five kinds of learning outcomes as intellectual skills, verbal information, cognitive strategies, motor skills, and attitudes. Even more consequential than the outcomes, however, is the process of learning. Basic assumptions in the process include the passage of information through the

senses into either short- or long-term memory by the level of attention and the perception of the learner. Yet, it is also recognized that the learning process is dynamic, intricate, and individualized.

The fact that learning cannot be clearly defined perhaps creates an even greater need for discourse and theory. Some knowledge of learning theories is essential for every practitioner to understand why certain methods or techniques can be applied and to understand, apply, or reject new proposals that are presented (Kidd, 1973). Some knowledge of theory always aids practice. It also may stimulate new forms of practice. Kidd further postulates that a research worker also ought to be guided by theory. Theory provides a set of assumptions as a starting point to guide what is done to be tested by experiment or to serve as a check on observations and insights. Until agreement is reached about what constitutes learning, it can be expected that there will be more than one theory to explain all that is meant by the term. Yet each theory is grounded in not only one's philosophy of education but also on one's philosophy of life.

Although there is not one absolute definition of learning or its theory, there is a general consensus of three components that constitute the concept of learning how to learn--learner needs, learning style, and training. Smith defines learning how to learn as possessing or acquiring the

knowledge and skill to learn effectively in whatever learning situation one encounters (1982).

Four Orientations to Learning

Merriam and Caffarella (1991) have categorized the dozens of learning theories into four orientations to learning--the behaviourist, cognitivist, humanist, and social learning. The behaviourist orientation includes learning theorists such as Skinner, Pavlov, Thorndike, Watson and Guthrie who view the learning process as a change in behaviour caused by stimuli in an external environment. The purpose of education for the behaviourist is to produce behavioural change in desired direction. They view the teacher's role as one of arranging the environment to elicit the desired response. Behaviourists evaluate learning by measuring the degree to which behavioural objectives were reached. These objectives seek to overtly define learning competencies, skill development, and training.

Although behaviourists insist that all learning requires reinforcement, the cognitive orientation holds that reinforcement does not actually produce learning but rather that it provides a signal about what to do or a reason for doing it. Learning theorists included in the cognitivist orientation are Piaget, Koffka, Ausubel, Gagne, and Bruner. These theorists view learning as an internal mental process such as insight, information processing, memory, and

perception. The degree of learning is determined by the learner's level of internal cognitive structuring (intelligence). The purpose of education is to develop the capacity and skills to learn better, and it is the role of the teacher to structure the content of the learning activity and to develop in the learner a conscious awareness of learning how to learn.

Ausubel (1968) refers to the learning process as acquiring particular meanings from the potential meanings presented in the learning material and of making them more available.

When an individual learns logically meaningful propositions, he does not learn their logical meaning per se but the meaning they have for him. . . . The cumulative residue of what is meaningfully learned, retained, and forgotten, determines how knowledge is psychologically organized . . . and the traces of the learning task by an established system provides anchorage for the new material, and thus constitutes the most orderly, efficient, and stable way of retaining it for future availability. (p. 222)

Cognitivists also agree that insight is another facet of the learning process and is a result of reorganization of perceptions into newly discovered structures. This was demonstrated by Kohler, a Gestalt theorist, in experiments with the great apes in which problem solving was achieved by the process of insight learning.

Humanists such as Maslow (1954) and Rogers (1983) view the learning process as a personal act to fulfil the learner's potential. The level of learning is greatly

determined by the learner's affective and cognitive needs. The purpose of education is for the learner to become self-actualized and autonomous, and it is the teacher's role to facilitate the development of the learner as a whole person. The principles of adult education fall under the humanist orientation with tenets such as andragogy and self-directed learning (Knowles, 1970). The humanistic approach to the delivery and purpose of adult education is to "provide a warm, accepting environment and to give learners frequent opportunities to direct their own learning."

Keefe (1982) provides a brief summary of the development of the humanist theory with:

Socrates, in utilizing what is known today as the Socratic method, sought to foster individual development. Rousseau, in Emile, addressed the needs of the individual. John Dewey, in his monumental work at the beginning of the twentieth century, focused on the learner as an individual. (p. 43)

However, Maslow (1954) describes the humanist theory of adult education best when he states that the purpose of adult education is to facilitate the development of the learner into a whole person--a self-actualized, autonomous human being.

The fourth orientation is that of social learning and is developed by theorists such as Freire (1970), Bandura (1977), and Rotter (1954). They view the learning process as interaction with and observation of others in a social or political context. Learning occurs through interaction,

behaviour, and environment. The purpose of education is social action, and the teacher's role is to model and guide new roles and behaviour. The outcomes of the social learning orientation are socialization, social roles, and mentoring.

Principles of Effective Practice

As Brookfield (1986) has observed, a distinct but similar set of adult learning principles has been devised by each of Gibb, Miller, Kidd, Knox, Brundage and Mackeracher, Smith, and Darkenwald and Merriam (p. 31). From these, Brookfield compiled a list of principles of effective practice for the educator to consider when planning and facilitating the teacher-learner transaction. These principles include mutual respect, a learner-centered approach, active participation, meaningful content with immediate use, self-direction and climate building of both the physical and emotional environment (pp. 9-20).

One of the major characteristics of adult learning is that it is often undertaken for immediate application in real-life situations. Thus the phrase "real-life learning" has been used to distinguish typical adult learning from the academic learning of formal situations that is usually spoken of as studying or educating (Fellenz & Conti, 1989). Sternberg (1986) describes eight differences between real-life learning and the learning typical in academic or test-taking situations.

Ideas on ways in which learning is shaped by forces within and/or outside the learner vary with each learning theorist and include such aspects as emotional development, physiological functioning, age trends, social class level, personality, attention, reinforcement, and motivation. In his theory regarding how adults learn, J. R. Kidd (1973) pointed out the importance of the affective domain.

The interests, needs and motivations of any learner, are primarily a matter of emotions, not intellect. . . . It is also worth noting not only that emotions influence learning, but that there are many similarities between the "field of emotion" and the "field of learning." Both learning and emotion are aspects of the same process of adjustment to environmental situations which the person must make continuously. (p. 95)

Knox (1977) analyzed the relationships among learning and a variety of aspects of education--personality traits and abilities, intelligence, environmental factors affecting intellectual, social and emotional development, and age trends.

Physiological functioning has some association with learning ability. This is reflected in the decline in later life in performance on learning tasks that are fast paced, involve physical skill, and are grouped in the category of fluid intelligence. . . . Another factor associated with learning ability and age is social class level and especially extent of education. As each generation has attained higher levels of formal and informal education, performance on tests of learning ability has been higher in young adulthood and has maintained the relative advantage at successive ages (Schaie, 1974). . . . A third factor associated with learning ability is personality (Schaie and Strother, 1968). An individual's outlook can greatly affect the approach taken to a

learning task, including a test of learning ability. Feelings of alienation, hopelessness, and defensiveness can discourage an individual from trying something new. (pp. 422-423)

Merriam and Caffarella (1991) consider three subconcepts to increase competency in learning: learners' needs, a person's learning style, and training, which is organized activity, or instruction. The teacher or learning facilitator in adult education, must understand both the characteristics and motivations of adult learners in order to select teaching techniques that suit the learner's needs (Seaman & Fellenz, 1989).

Malcolm Knowles (1950), reflecting the increasingly popular thinking of Carl Rogers, writes:

Teaching is a process of guided interaction between the teacher, the student, and the materials of instruction. . . . Teaching, like medical practice, is mostly a matter of cooperation with nature. The function of the teacher is to guide the student into the kind of experiences that will enable him to develop his own natural potentialities. (pp. 31-33)

Thus, Knowles redefined the term andragogy as "an emerging technology for adult learning" involving the following seven step process:

1. Set a cooperative learning environment.
2. Create mechanisms for mutual learning.
3. Arrange for a diagnosis of learner needs and interests.
4. Enable the formulation of learning objectives based on the diagnosed needs and interests.
5. Design sequential activities for achieving the objectives.
6. Execute the design by selecting methods, materials, and resources.

7. Evaluate the quality of learning experience while re diagnosing needs for further learning. (p. 54)

Practitioners can help adults understand age trends in learning abilities and recognize the other factors that are also associated with learning ability (Knox, 1977). Such understanding is also useful to practitioners themselves as they plan educational activities for various categories of adults.

Learning Strategies

Educators have long searched for a definitive explanation for the distinctions between individual learners. Intelligence, cognition, teaching theories, and learning styles have all been examined, yet none has accounted for the various approaches learners take to accomplish their learning tasks. Consequently, adult educators have begun to examine the concept of learning strategies as a means of exploring these individual differences.

In any given setting, learners use various strategies to achieve their learning tasks. Learning strategies are those techniques or specialized skills that the learner has developed to use in both formal and informal learning situations (McKeachie, 1980). While learning styles refer to the inherent ways that people process information and are not easily changed or are slow to change, learning

strategies deal with the ways people approach specific learning situations. The strategies are external behaviours developed by an individual through experience with learning which the learner "elects to use in order to accomplish a learning task" (Fellenz & Conti, 1989, p. 7). Learning strategies are "more a matter of preference; they are developed throughout life and vary by task. While the effectiveness of a particular style relates to the individual, the success of strategies depends more on the situation" (Fellenz & Conti, 1993, p. 4).

"Recent research on teaching and learning has focused on the active role of the learner in student achievement" (McKeachie, 1980, p. 23) and includes those techniques, tactics, and methods which enhance effective learning. The learning strategies a student uses can have an effect upon their academic achievement (Mayer, 1987), and a learner's effective choice of learning strategies "usually results in greater learning" (McKeachie, 1980, p. 3). "The skills or techniques selected to accomplish the task often have a great influence on the success of that learning activity. Adeptness and insight in the use of learning strategies appears to be a significant part of one's ability to learn how to learn (Fellenz & Conti, 1993, p. 3). The learner's ability to select the appropriate learning strategies for a specific task may then well prove a fundamental educational tool to enhance mastery of material.

Although researchers in the fields of education and psychology have concentrated on various aspects of the term, all have noted the importance of the concept of learning strategies. McKeachie (1980) and Weinstein et al. (1988) support an approach to learning which involves teaching a variety of skills believed to be linked to academic performance. Accordingly, McKeachie (1980) has investigated links between types of attention or concentration; memory aids such as grouping, automatization, and visualizing; the use of elaboration as a memory aid; and the vital role of motivation in learning.

Weinstein et al. (1988) and Mayer (1987) have researched how students process information and other behaviours learners engage in during learning. Weinstein et al. (1988) defines learning strategies as "behaviors and thought that a learner engages in during learning and that are intended to influence the learner's encoding process" (p. 315) and further suggests that such strategies may be designed to affect the motivational state or the manner in which one acquires, organizes, or integrates new information (Fellenz & Conti, 1993, p. 3).

Fellenz and Conti have focused on the role of learning strategies used in real-life learning situations by adults. As such, they have identified five areas of learning strategies upon which to center their investigation. "The phrase real-life learning has been used to distinguish

typical adult learning from the academic learning of formal situations that is usually spoken of as studying or educating" (Fellenz & Conti, 1993, p. 4). This approach to learning strategies can be measured with the Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS) (Conti & Fellenz, 1991). This valid and reliable instrument consists of real-life learning scenarios with responses drawn from the areas of metacognition, metamotivation, memory, critical thinking, and resource management. Each of these five constructs consists of three learning strategies (Conti & Fellenz, 1991; Fellenz & Conti, 1989).

Metacognition Strategies

Metacognition is defined as the knowledge and control over one's thinking and learning (Brown, 1985). It is a conscious, reflective endeavour; it is one that requires the learner to analyze, assess, and manage learning activities. With the development of the concept of metacognition by Flavell (1979) and Brown (1985), the importance of the learner's self-understanding became apparent in academic success. Smith (1982) concluded that "a central task of learning how to learn is developing awareness of oneself as a learner" (p. 57). In his theory of intelligence, Sternberg (1986) concludes that important to practical intelligence is the ability of the learner to capitalize on strengths and minimize or compensate for weaknesses. Consistent with

Sternberg's metacomponents of cognition, the three learning strategies involved in the area of metacognition in the SKILLS instrument are Planning, Monitoring, and Adjusting. Flavell (1979), Brown (1985), and Sternberg (1986) all contend these processes are interactive and dependent on each other (Counter & Fellenz, 1993, p. 9).

Planning. Planning a learning activity assumes that learners have accepted responsibility and have taken control over their learning experience. They know how to elicit purpose from both themselves and the situations and how to organize and identify the steps essential to the learning process (Yussen, 1985). "Important elements of the learning situations are noted and strategies are previewed to determine how best to proceed with the situation" (Counter & Fellenz, 1993, p. 9). Ways to implement metacognitive planning include overviewing, focusing on purpose, and acknowledging one's learning style. Specifications are created in the process of planning with a unique prescription being developed for each learning activity (Scribner, 1986). Planning builds in flexibility so strategies can be chosen to meet precisely the right conditions on the least effort criterion.

Monitoring. During the process of learning, various things can happen to interfere with attention or understanding, so monitoring becomes an important part of

metacognition as one goes through the learning process. By monitoring, learners assess their progress through a learning project. In this process, they are cognizant of their learning progress and closely monitor their learning by checking to see if they are on task and by comparing their progress to accepted standards or models. Some strategies that can be used in monitoring include self-testing, comparing progress from previous learning situations, asking for feedback, checking new resources for information, and keeping track of diverse steps in learning (Fellenz & Conti, 1989). Others include the practice of questioning (a) the value of the knowledge to one's self, (b) potential applications of the material, or (c) the relationship of what is being studied to other material. Comprehension monitoring is another factor in this strategy and "involves establishing learning goals, assessing the degree to which these goals are being met, and, if necessary, modifying the strategies being used to facilitate goal attainment" (Weinstein et al., 1988, p. 294).

Adjusting. Metacognitive adjusting involves the learner modifying and revising learning plans in relationship to the evaluation of the learning progress. Successful learning occasionally requires modification in order to respond to changing learning situations. Strategies used to adjust learning activities include revising one's learning plan,

changing learning strategies, restructuring learning to satisfy one's knowledge level, and developing techniques to help match the learning task to one's own personal learning characteristics (Fellenz & Conti, 1989).

Metamotivation Strategies

Just as metacognition addresses the concept of one's knowing and understanding one's own learning patterns, metamotivation deals with one's knowing and understanding how or why one is motivated to participate or remain in a learning activity. Metamotivation is the awareness of and control over factors that energize and direct one's learning (Fellenz, 1993, p. 12). Deci and Ryan (1985) describe energization as a response to needs that are innate to the organism as well as to those that are acquired through interactions with the environment (p. 3). Direction is the behavior taken to do something or to reach some goal. Focusing on the internal processes involved in adult learning, motivation in real-life learning situations has been called "metamotivation." The prefix "meta" is used to differentiate the concept from external motivation prevalent in traditional education institutions (Fellenz & Conti, 1989).

When discussing these motivational forces, both Rubenson (1977) and Boshier (1973) believe that motivation for learning is a function of the interaction between

internal psychological factors and external environmental variables, or at least the participant's perception and interpretation of environmental factors. This "perceived" situation may or may not be the "real" situation.

Motivation is regarded as an aspect that shapes adult learning. "An important functional role of motivation is to contribute to the maintenance of positive self-views and perceptions of self-efficacy and personal control that underlie the ability to change negative attitudes toward learning" (McCombs, 1988, p. 142). The students' sense of competence is also important to learning (McKeachie, 1980).

Adult educators tend to use the term "participation" rather than motivation when referring to why adults engage in formal educational programs (Cross, 1982). This is because adult learning is a voluntary activity. Boshier (1973) further adds that:

Both adult education participation and dropout can be understood to occur as a function of the magnitude of the discrepancy between the participant's self concept and the key aspects (largely people) of the educational environment. Nonparticipants manifest self/institution incongruence and do not enroll. (p. 260)

Attention. One of the three learning strategies of motivation identified in SKILLS is attention. This is focusing on the material to be learned. Kidd (1973) notes that a high attention level, which he calls engagement, is crucial to successful learning. The key to learning is

engagement--a relationship between the learner, the task or subject matter, the environment and the teacher (p. 266).

One of the factors of learning is attention.

If students are going to learn, they typically have to be paying attention. However, there is also learning without conscious attention, but generally speaking you are going to learn more if you try to pay attention. . . . Attention is a capacity in which certain things are in focus. (McKeachie, 1980)

From Keller's (1987) ARCS model of strategies, "attention involves the arousal of interest in learners, the stimulation of an attitude or inquiry, and the maintenance of attention" (Fellenz, 1993, p. 15). It can be influenced by curiosity, interest created from previous experience, or a deliberate recognition of a need to learn (Fellenz, 1993, p. 15). Important to attention is the dedication of time and the creating a suitable environment that allows for a minimum of distractions. Researchers such as Dunn and Dunn (1978) and Farley (1988) conclude that factors that influence learning include light, sound, temperature, the time of day, and biological rhythms.

Reward/Enjoyment. A second component of the metamotivational learning strategies is reward or enjoyment. This is anticipating or recognizing the value to oneself of learning specific material, having fun, or experiencing satisfaction with the learning activity (Fellenz & Conti, 1989). Consistent with all metamotivational strategies, the

affective domain is once again the dominant factor in learning with this component. The reward for learning can result from very specific, goal-oriented activities or from a feeling of increased competence or control over an environment. Motivation results from people's attempts to achieve and maintain order in their lives (Conti, 1991). Enjoyment "appears to be a more important motivational factor in real-life learning than in formal learning situations where external motivators such as grades or certificates often dominate" (Fellenz & Conti, 1993, p. 16). Personal growth, increase in self-esteem, helping others, working as part of a team for a worthwhile project, feeling good about accomplishments, or pride in the results of an activity are all recognized as strategies that motivate learners to embark upon and to sustain a learning experience.

Confidence. Confidence in one's ability to learn is one of the essential elements in motivation (Keller, 1987). One of the very important factors in educational participation is the self-esteem of the individual. Those who evaluate themselves negatively are less likely to expect success (Rubenson, 1977), and poor success is likely to be due to the learner's perceived incongruence with the educational environment (Boshier, 1973). "It is clear that continuing motivation to learn is in large part a function of the

learner's perceptions of self-efficacy and self-control in learning situations" (McCombs, 1988, p. 142). The examination of learning style factors confirms that "expectancy scores consistently correlated with achievement of adult students. . . . Belief that one can complete the learning task successfully is an important factor in motivation to learn" (Fellenz & Conti, 1993, p. 16).

Memory Strategies

Memory is "the capacity of humans to retain information, to recall it when needed and recognize its familiarity when they later see it or hear it again" (Wingfield & Byrnes, 1981, p. 4).

The process of learning and memory are so closely related and interdependent that it is often difficult to determine whether we are concerned with one phenomenon or two . . . one who does not learn has nothing to remember, and without memory there is no evidence of learning. (Long, 1983, p. 58)

Memory is "viewed in its relationship to adult learning and the influence it can have on decision making and consequent human behavior" (Paul & Fellenz, 1993, p. 24). "The intended application of the material to be remembered also affects the degree of attention given a topic. Selective attention is the process of allocating attentional resources to one object or event over another" (pp. 21-22). Thus, meaningful material is retained longer than that which is not.

"Metamemory is practical knowledge acquired about our own memory capacities and what we must do to remember; or simply, what people know about how they remember" (p. 22). Learners can improve their memory performance and the efficiency of their learning by developing metamemory skills; thus, difficulties encountered in learning may not be due to the inabilities of the learner but rather may be the result of not using the appropriate memory strategy for the learning task (Wingfield & Byrnes, 1981).

The mental activities used to store, retain, and retrieve knowledge are called memory processes. These processes are accomplished either through internal or external memory strategies. Internal memory aids are strategies in which all efforts to remember are completed by the individual within their own thought processes. External memory techniques rely on the interaction of the mental processes of the individual and the manipulation of the environment to insure recall (Paul & Fellenz, 1993, p. 23). The memory strategies used in the SKILLS model include Organization, External Aids, and Memory Application.

Organization. Organization refers to the manner in which the memory reorders or restructures information from that in which it was originally presented (Seamon, 1980). Successful strategies entail arranging the material to be learned in patterns that direct the retrieval process.

Norman (1982) identifies relationships among concepts and events as semantic networks and states that a major property of memory is the richness in relationships that can be depicted from these networks.

Organization strategies used in the SKILLS model include several activities used to process information so that material will be better stored, retained, and retrieved. While mnemonics is one internal memory device used to enhance memory, visualization, imagery, and the forming of associations and connections are others often used to form stable memories from experiences and to enhance recall (Zechmeister & Nyberg, 1982). Chunking is the organization of information into sets, thereby reducing the overall number of categories to be remembered (Paul & Fellenz, 1993, p. 23). When information is chunked, individuals seem to be able to remember and deal with larger amounts of data (Miller, 1987). Such grouping definitely improves the total amount of information that is retrievable (McKeachie, 1980; Zechmeister & Nyberg, 1982).

External Aids. The SKILLS model uses several external aids that involve the learner controlling the environment in some manner to enhance recall. External aids include the reviewing of material (Zechmeister & Nyberg, 1982), the use of appointment books, making lists of things to do, placing

visual items on display, and asking others to provide reminders at relevant times.

Memory Application. Strategies related to application of memory involve the use of those internal strategies involved in memory organization for the purpose of planning, completing, and evaluating learning. In adult real-life learning, memory application is used for self-improvement, problem solving, and critical thinking; such applications range from acquiring a new physical skill to developing the knowledge and political skills necessary for community action (Paul & Fellenz, 1993, p. 25).

Critical Thinking Strategies

Critical Thinking is a reflective thinking process utilizing higher order thinking skills in order to improve learning. Although problem-solving and decision-making skills are at times included as part of higher-order thinking processes, critical thinking has a more general and more important goal; it is improving individual and societal learning (Fellenz, 1993, p. 30). "As our society has entered more deeply into an information age, our appreciation for the value of higher order thinking skills has increased" (p. 30). Moreover, adult educators such as Horton (1990) and Freire (1970) deem critical thinking skills and praxis to be the catalyst of social change and democratic justice.

The SKILLS model of Critical Thinking strategies is based on Brookfield's (1985) four components outlined in Developing Critical Thinkers. Brookfield's approach to critical thinking is applied to real-life situations and is composed of (a) identifying and challenging assumptions, (b) challenging the importance of concepts, (c) imagining and exploring alternatives, and (d) reflective skepticism. The SKILLS Critical Thinking strategies, based on these components include Testing Assumptions, Generating Alternatives, and Conditional Acceptance of General Knowledge.

Testing Assumptions. "The process of challenging assumptions presumes the ability to identify these assumptions and the willingness to examine them. Because they have often been taken for granted over long periods of time, their limitations are not readily noticed" (Fellenz, 1993, p. 31). The SKILLS model uses a number of specific activities to measure the challenging of assumptions in real-life learning situations. These "invite respondents to examine the accuracy or the acceptance uncritically given to an assumption while others prompt them to identify relationships, spot inconsistencies, or question value sets" (p. 32).

Generating Alternatives. Exploring alternatives when engaged in critical thinking or problem solving is vital in

the complex, multiple-solutioned situations common to real life (p. 32). The SKILLS instrument measures the learner's preference to hypothesize while grounding options within a given situation and include strategies such as brainstorming or envisioning the future, ranking the order of alternatives, and identifying alternate solutions (p. 33).

Conditional Acceptance. Advocating reflective skepticism to avoid absolutes or over simplifications, Brookfield (1987) claims that "considering and imaging alternatives leads to the development of a particularly critical cast of mind, especially where any claims for universal truth or validity of an idea or practice are concerned" (pp. 20-21). As monitoring results and evaluating consequences are evidence of critical thinking, the SKILLS model uses these strategies to measure Conditional Acceptance along with other activities such as questioning simplistic answers and predicting consequences.

Resource Management Strategies

Learning strategies that lead to effective use of resources can have a positive effect on the learning process (Fellenz, 1993, p. 37), and management of these resources is an important aspect in finding solutions to real-life, everyday problems. The number and variety of sources available imply a need to choose wisely so the teaching of learning strategies should include "techniques for

identifying and acquiring appropriate learning resources" (Fellenz & Conti, 1989, pp. 4-5).

The location and selection of materials involves a variety of processes that are specific to personal preference. Although one may begin a search at a local library using newspapers, magazines, or books, fewer than 25% of American adults use the library with regularity (Shirk, 1983). While some adults prefer electronic sources of information such as the television or computer, others feel the best sources of information in real-life learning situations are other people.

Environmental factors may also influence the learner's preference for locating materials. The learner's environment, how much time is available, how difficult it is to procure the materials, and the learner's ability to tell what are good information sources will also impact resource management (Hill, 1992, p. 46). Many adults do not perform the task of locating materials very well (Shadden & Raiford, 1984). Some materials may be too difficult to understand or may enter into too much detail. Occasionally, there are so many printed or audiovisual materials available that it is difficult to choose the most relevant (Smith, 1982; Tough, 1971). The SKILLS model measures the learner's preference to identify, evaluate, and use resources relevant to the learning task.

Identification. Using effective strategies for resource management involves the identification and location of the best possible source of information which may include modern information sources, print sources, people, models, professionals, or agencies (Fellenz, 1993, p. 36). A concern of the learner at this point can include the learner's willingness to use a particular source. The learner must judge whether obtaining the resource is equal in value to the time, energy, and expense in gathering it (Tough, 1971).

Critical Use. A second strategy addressing effective use of resources involves critical reflection about the material and selection of the most appropriate resource rather than simply those that are readily available. Considerations in evaluating the resources may include the timeliness of the material or the potential bias of the source. This can involve the critical evaluation of information presented by an organization seeking support (Fellenz & Conti, 1989). Strategies used in the SKILLS instrument to measure the critical evaluation of resources include contacting an expert or an outsider, checking the information with a second source, and observing or asking questions to check for bias.

Human Resources. The third resource management strategy used in the SKILLS model is integrating others into the social and political processes of learning. This involves

more than simply using others in learning situations. It entails "dialogue that involves listening to people with different opinions or insights into issues as well as the use of discussion to think through or study problems. In some situations, the support provided by human resources may be as important as the information they contribute"

(Fellenz, 1993, p. 37). This support and networking are strategies considered important in the measurement of a learner's preference in incorporating the use of human resources in their learning process.

Canadian Community Colleges

Prior to the 1950s, Canadian education consisted of four components: elementary and secondary schooling; higher education (universities); trade and vocational training provided in specialized institutions; and adult education, which was often provided informally by volunteers without public funding. The inception of the Canadian community college into the Canadian education system arose out of the failure of the university curriculum to meet the needs of young people who wanted a vocational education rather than one to develop intellectual capacities (Dennison & Gallagher, 1986).

As new institutions were established during the 1960s, the term "post-secondary education" or sometimes "tertiary education" became popular as a collective label to include

all formal education after secondary school, which included both degree and non-degree programs (Cohen & Brower, 1987). The community college differentiates from the university in that it is a non-degree-granting public or private institution that offers vocational or university transfer studies in programs of varying lengths. A one-year program usually offers a certificate; a two-year program leads to a diploma. Some colleges also offer university transfer courses that may include one, two, or three years of study.

Canadian colleges operated in contrast to a far more democratic educational tradition in the United States. In America, public education was viewed as the route to material success and the evidence of social responsibility that provided equal opportunity for the populace (Gleazer, 1980). However, Canadian education has remained primarily under the influence of the British school system with its sharp distinction between the secondary schools and the universities. Over the years, Canadian educators have tended to totally accept the assumption that subject matter is distributed along an hierarchical scale of values. For example, certain studies such as English literature or mathematics are acceptable and appropriate to college curricula; others such as carpentry or cosmetology are not. By tradition, certain subjects belong in the university; others do not.

However, research and positive experiences in America caused the Canadian system to re-evaluate the purpose and function of post-secondary education in Canada, and America became a major influence on the ways in which the Canadian college system developed to respond to newly identified needs. However, change is slow, and although many Canadians subscribe to the American approach, elitist British roots still reside in an institutional emphasis on university transfer and in content-driven, teacher-centered curricula (Dennison, 1995). One area of stark contrast between the two systems, however, is the public funding in Canada for adult education programs such as literacy and Adult Basic Education (ABE).

Similar to the American system are the principles and traditions of the public community college which is being modelled after the public school system and guided by the same axioms. In both countries, the three prevalent foundations are universal opportunity for a free public education, local control and support of the educational institution, and a relevant curriculum to meet the needs of the individual and of the nation.

Monroe (1972) describes the objectives and functions of the community college shared by both nations. The first objective is to offer a comprehensive curricula that includes liberal arts, occupational fields, adult and continuing education, remedial education, and professional

education. The second objective is to maintain an open-door principle to admit all high school graduates or those over the age of 18. The third objective is to respond to the community orientation. This involves serving the specific needs of a geographic area, meeting the vocational needs of the community, providing an educational opportunity for students from middle- and upper-lower class families, and providing leadership and research services to the community.

There are many similarities in the functions of the community college in both in America and Canada (Monroe, 1972, pp. 32-35). These include:

Transfer Curricula. The transfer curriculum is a basic part of all community colleges. Colleges which primarily began as technical institutes or vocational schools have found that they must eventually add liberal arts to their curriculum.

Citizenship and General Education. General education courses designed to meet citizenship needs have become a requirement to provide the students with leadership training and an awareness for social responsibility.

Occupational Training. The community college is increasingly becoming the agency to train students for entry-level positions that require sophisticated, technical knowledge. The community college must also retrain employees for new jobs as old ones become obsolete.

General Studies. These courses have a liberal arts content and for many students offer more prestige than the vocational courses and may be recognized with an associate degree.

Adult and Continuing Education. The adult education function is predicted to greatly expand as jobs require more training and the general level of education increases.

Remedial Programs. Most community colleges now offer remedial work in language, reading, and mathematics to prepare students for college or university programs.

Counselling and Guidance. There is an increasing need for guidance services to assist students in dealing with both personal and academic problems while attending school.

Similar issues are shared by community colleges in both the Canadian and American college systems. Both will require increased funding to keep up with the rapid pace of technological change. Both will need to expand their international context by developing an edge in international trade, global markets, and technological competition. Unemployment and new employment issues will have to be addressed to provide training for changing employment patterns such as entrepreneurship, home-based offices, and cottage industries. In addition, as the population ages and as multicultural and regional diversity increases, the community college will be a major source of training and leadership in each society.

