Learning strategies in the Fort Peck Reservation community
by Robin Bighorn

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:
Native Americans are the least represented group in higher education. However, through the self-determination movement, Indian people are seeking to regain control of their learning. A major institution for Native American's regaining the control of their education is the tribal college. To do this, a need exists to know more about how various groups of Indian people learn. Learning strategies offer one way of finding this source of information.

This study described the learners served by the tribal college on the Fort Peck Reservation. To do this, both students from the college and employees from community agencies were included. The purpose of this study was to (a) identify learning strategies of adults on the Fort Peck Reservation at different agencies in the community, (b) examine Fort Peck Community College students to determine if it is possible to discriminate between the highest and lowest achievers, and (c) identify and describe distinct groups of learners on the Fort Peck Reservation.

The Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS) was used to measure the learning strategies of the 179 participants. The scenarios in SKILLS were specifically tailored to fit learning situations on the Fort Peck Reservation. Discriminant analysis revealed that the participants did not differ in their use of learning strategies when they were grouped by gender, ethnicity, age, tribal affiliation, degree of traditionalism, and grouping as either a college student or a community agency employee. However, when the tribal college students were grouped according to those with the highest and those with the lowest grade point averages, they differed in the process of Reactive Networking. Those with low grade point averages engaged in active networking with others much more than those who maintained a high grade point average.

Cluster analysis was used to identify four distinct groups of learners on the Fort Peck Reservation. One-way analysis of variance and individual and group interviewing of the respondents provided additional data for describing these clusters. Based upon this quantitative and qualitative data, the four clusters of learners were named Adjusters, Critical Thinkers, Resource Managers, and Engagers.
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FORT PECK RESERVATION COMMUNITY

by

Robin Bighorn

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of the requirements for the degree

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This thesis has been read by each member of the thesis 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.

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ABSTRACT

Native Americans are the least represented group in higher education. However, through the self-determination movement, Indian people are seeking to regain control of their learning. A major institution for Native American's regaining the control of their education is the tribal college. To do this, a need exists to know more about how various groups of Indian people learn. Learning strategies offer one way of finding this source of information.

This study described the learners served by the tribal college on the Fort Peck Reservation. To do this, both students from the college and employees from community agencies were included. The purpose of this study was to (a) identify learning strategies of adults on the Fort Peck Reservation at different agencies in the community, (b) examine Fort Peck Community College students to determine if it is possible to discriminate between the highest and lowest achievers, and (c) identify and describe distinct groups of learners on the Fort Peck Reservation.

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CHAPTER 1

INTRODUCTION

Indian Education

The coming of the Europeans to the New World drastically influenced Native American communities through civilization, Christianization, and education. These influences affected Native American culture and religion; it disarranged the Native people's self-image and way of life. This change also placed Native Americans in a new society of which they did not want to be part and which they could not understand.

Native American educational practices have a long history in America. Early European educational processes affected indigenous peoples (Wright, 1985). However, Native American tribes were strong, and independent during these eras and had little need for the educational procedures brought by the early colonists (Beck, Walters, & Francisco, 1977).

Furthermore, Native American schooling in colonial America was affected by the continual change that characterized the exchange between the European and Indian cultures. Where this cultural exchange occurred, it affected both Native Americans and Euro-Americans. This
exchange took place on many levels. It brought into contact and often conflict different various or religion, land ownership, family relationships, and ways of live. All of those involved were molded and remolded as they found themselves continually thrust into the cultural arena (Szasz, 1988, p. 3).

Colonial Native American schooling took place within this changing society. Education was viewed by several Euro-Americans and Native Americans as a tool for achieving a cultural change between the two societies. The colonial schoolmasters felt that work was a way to change Native American youth. These teachers reasoned that if the Native American youth could be taught to read and write, to do math, to cipher, to comprehend the Bible, and to change their ways of life, they might teach their own people to do likewise (p. 4).

Native American youth were educated in white schools during the 19th and 20th century. They brought with them to these schools varying degrees of Native culture. Formal schooling often served as an overlay for the attitudes and perceptions of the world that they had already acquired within their family and community. Thus, the Native American child came to school with unique cultural traits. Educators, scholars, and students of Native American history cannot fully comprehend the responses of the Native American youth in a formal setting without an awareness of the Native
American child-rearing practices that preceded the educational process (p. 7). Consequently, as a result of the Louisiana Purchase and other factors contributing to westward expansion, Native Americans had no other alternative but to change their established ways of educating their youth and somehow adapt to the methodology of the colonists (Beck, Walters, & Francisco, 1977).

The early educational efforts for Native Americans was designed from the colonial perspective. These educational efforts were supposedly to create new Native Americans and to replace their original culture (Beck, Walters, & Francisco, 1977). Freire (1970) uses the term "cultural invasion" to describe the imposition of one dominant people's culture over another culturally different group. As a result of this cultural invasion and the educational policies that have been imposed on Indian people, Native Americans have remained behind other ethnic groups in regard to education from the time of early colonial efforts until the present day (Stein, 1988).

After the first quarter of the 20th century, there was a concern among some government officials to review and improve upon Native American education and economic life patterns. The outcome of these efforts was the return of some control to the Native American people at the local level. Two examples were the Indian Reorganization Act of 1934 and the Indian Education Act of 1974. Although, the
Indian Reorganization Act did not address Native American education directly, it indirectly brought to surface the need for higher education through policies such as tribal economic restoration, political reform, and meaningful self-government (Davis, 1994, p. 261). The Indian Reorganization Act did return a limited amount of control to tribal authorities in such areas as land ownership, and it provided a small amount of funding for vocational purposes. The Indian Education Act of 1974 provided with some funding for Native American students in undergraduate and graduate levels of education, and it also provided for some adult education classes.

In addition, the Indian Self-Determination and Education Assistance Act of 1975 presented tribally-operated schools as an alternative to schools administered by state or federal governments. In tribally-run schools, also known as contract or grant schools, tribes assume responsibility for school management and operations. Once a tribe contracts with the Bureau of Indian Affairs (BIA), it is able to control the curriculum, teacher hiring, and overall administration (Levitan & Miller, 1993, pp. 49-50).

In 1992, the BIA was responsible for the education of nearly 41,000 students. Almost 17,000 of these lived at and attended reservation boarding schools. These boarding schools housed students who lived too far from school facilities for daily commuting to be practical, children
with discipline problems, and those whose parents were unable to care for them. Of the 166 BIA funded schools, 74 were operated and managed by tribes under contract (p. 50).

In 1991, an audit of BIA schools by the Interior Department inspector general's office revealed that the BIA was deficient in implementing its mandates. An on-site inspection of several schools found physical conditions "so deplorable as to impede the education process (p. 47). The audit showed unstable management as a major factor contributing to BIA's failure to provide effective administration and oversight of its programs (p. 50).

**Tribal Colleges**

Tribal colleges are two-year, post-secondary, educational institutions. These institutions offer a broad curriculum from various educational levels, which are (a) one-year and two-year vocational programs leading to certificates or degrees in a number of occupational fields, (b) transfer programs comprising the first two years of a four-year program, (c) adult basic education components, and (d) community service classes which are to meet local needs and services. Tribal colleges focus on organized departments of Native American studies. They stress the study of Native American culture, and particularly, the culture of their local tribe (Boyer, 1989).

The lack of educational achievement among post-high school reservation students is a long-standing problem. In
the early 1970's the realization that reservation Indians were having difficulty on mainstream campuses prompted the creation of Tribally-Controlled Community Colleges. There are currently 29 tribal colleges (Boyer, 1989, p. 50). In most instances, lack of achievement has been a major obstacle in the educational advancement of Native Americans (Stein, 1987). In contrast to other groups of Americans, indicators suggest that Native American are behind in educational attainment. These indicators include percentages of Native Americans graduating from high school, percentages going on to college, percentage of Native Americans graduating from college and/or holding advanced degrees (Astin, 1988; Boyer, 1989).

"The most significant piece of legislation in the field of American Indian higher education was the Tribally Controlled Community College Assistance Act of 1978 (PL95-47)" (Oppelt, 1990, p. 86). This piece of legislation served as a vehicle in the form of financial support to the tribal college movement. This movement has proven to be a driving force among Native peoples to secure control over their own education. Furthermore, Tribally Controlled Community Colleges have proven to be very rewarding and a continuous development in the field of Native American education (Boyer, 1989; Stein, 1986).

Local control shapes individual colleges in meeting the specific educational needs of their institutions. The
institutions are diverse and become more so as they mature. Each has its own history, educational philosophy, limitations, and resources. Curricula, both academic and vocational, reflect the social, economic, and cultural situations of college development and innovation (Houser, 1991).

One aspect that has contributed to the success of tribal colleges is their philosophy which stresses the priority of serving the needs and interests of the community. Another factor to their success is they place a high priority of each tribe's culture as an integral part of their curriculum (Boyer, 1989).

Tribal college students, whose average age is approximately 27, return to the academic environment for a number of reasons; these include to seek job training, for personal satisfaction, or to enter a transfer program where they may eventually attend a four-year institution (Boyer, 1989). As adult learners, they have a number of social roles and responsibilities, have an abundance of different experiences, are undergoing character changes of development related to stable and unstable social and economic environments, and undergo educational challenges with anxiety and without academic confidence (p. 38-45). Some of these factors are identical or similar to those found by other adult students.

The communities in which tribal college students live
are, economically, the poorest in the United States. Seventeen of the colleges are located in chronically distressed agricultural areas of the Northern Great Plains. Economic hardships on reservation communities are compounded by the hardships of geographic and cultural isolation and by extreme climatic conditions (Houser, 1991). In addition, there are high rates of alcoholism and drug abuse present, which are important factors for low educational attainment (Mayeske, 1973).

Despite the high dropout rate and low levels of academic achievement, the total number of Native Americans attending post-secondary educational institutions is increasing. Women attending college accounted for most of the increase. Between 1978 and 1990 Native American female enrollment jumped from 41,000 to 60,000 while Native American male enrollment increased by only 6,000, from 37,000 to 43,000. In 1990, a total of 103,000 Native American students on both reservation and nonreservation attended post-secondary institutions. Forty-seven percent enrolled in four-year institutions, and the rest were in two-year institutions. Only 1 in 10 Native Americans 25-years or older has completed 16 years of education, compared with 20.3% of the total population. Native Americans are even more underrepresented among graduate students. In 1988, 1,133 were awarded master's degrees, 84 received doctorates, and 268 received their first professional
degrees (Levitan & Miller, 1993).

Although the trend of low educational attainment is changing, Native American students still remain behind that of other ethnic groups. Less than 55% of Native American students graduate from high school, and for those who do finish, the level of academic preparation is not satisfactory (Boyer, 1989). 17% of those students who graduate from high school go on to college as compared to 35% of white students (p. 28). Less than 33% of Native Americans do not complete college requirements whereas 60% of white students complete the baccalaureate (Austin, 1988).

Tribal colleges have been grossly underfunded. In 1981 Congress authorized funding up to $6,000 per student to promote post-secondary education for Native Americans, but budget cuts during the 1980's diminished the funding levels. The funding hit a low of just under $2,000 per student in 1988 but rose to $3,168 per student in 1991. By comparison, public colleges spent $4,234 per student in 1991 (Levitan & Miller, 1993).

With the founding of tribal colleges, the college success rate for Native American students has increased. This is partly because of the tribal college's educational mission that supports Native American needs and interests. The large numbers of full and part-time Native Americans enrolled in tribal colleges indicate that Native American students are meeting academic requirements. Tribal colleges
are successful (Boyer, 1989). Tribal colleges must continue their educational mission because they are the source, and future for Native Americans. Because of tribal colleges, "the future holds a vision of hope for Indian people" (St. Pierre, 1996, p. 125).

Adult Learning

Efforts have been made by some teachers to create an exciting classroom environment by using different teaching skills. Although the educator has little control of the learning process, the behavior of the teacher influences the learning process more than any other factor (Knowles, 1970). However, it is the learner who determines the level of learning, and the interpretation of that particular learning process. While the teacher has an important role, however, the students is the one who actually decides what is to be learned; this is more important than what the teacher actually does (Shuell, 1986). Some factors that exercise this learning may be the students past experiences, the student's level of interest in the subject, participation in the subject matter, and the knowledge that the student has to accomplish this learning.

The learner-centered approach has developed enormous changes in the past two decades as the field has moved from a focus on adult education to adult learning.

As a field of practice, research and conceptual development had been on providing services with
learning viewed as one component of educational programs. But a shift to a field of study with the individual learner as the central concern opens whole new realms; such as, self-directedness, and individual development, to the field (Fellenz & Conti, 1989, p. 4).

Adult education could be viewed as a focus on the educator; on the other hand, adult learning implies that the emphasis be directed to the learner.

Through his continuous work, Knowles (1970) has enhanced this learner-centered approach, which others in the field have come to accept. He labeled the term as "andragogy." Andragogy comes from two Greek roots: aner (an adult) and agogos (leader of) (Grubbs, 1981). The two words connected creates andragogy, which means an "educational mode in which the teacher is viewed as a facilitator of learning" (p. 5). Students are perceived to be self-directed. The relationship between teacher and student is personal and trusting. The atmosphere for learning is formal and cooperative (p. 6).

Researchers have found that in the field of education and psychology learning strategies are of significance. Through his investigation, McKeachie (1988) has suggested that there are similarities 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. Other researchers such as Hill (1992) have focused on the role of learning strategies used in real life learning situations.
Fellenz and Conti (1989) have chosen five areas of learning strategies upon which to center their investigation. They are metacognition, metamotivation, management of resources, critical thinking, and memory. Metacognition learning strategies are applied to planning how to go about learning, monitoring how well the plan is carried out, and adjusting the plan depending on progress toward the learning goal. Metamotivation is an awareness of how individuals achieve and have control of self-motivation to accomplish a learning task. Resource management is how learners distinguish and critically use appropriate methods of information. Critical thinking relates to how one hypothesizes and uses other options in a solution of the learning material. Memory strategies are important because to recall things from memory, they must be stored in a structural and efficient manner.

These aspects of learning strategies are thought to be an integral part in how much and how well students achieve in learning situations (McKeachie, 1988).

**Fort Peck Community College**

One of Montana's seven tribal colleges is Fort Peck Community College (FPCC). FPCC is located on the Fort Peck Reservation. "Fort Peck, the second largest reservation in the state of Montana, is the home of two different tribes: The Assiniboine tribe, Yanktonai and Sisseton Wahpeton
Sioux" (Bryan, 1985, p. 42). Fort Peck Community College (FPCC) began operations in 1978. It was housed in the outdated Bureau of Indian Affairs building across the street from the Fort Peck Assiniboine and Sioux Tribal Building in Poplar, Montana. College founders shared a vision that the Assiniboine and Sioux Tribes would be able to educate and train their own people and to use this education to preserve, revitalize, and perpetuate their tribal cultures (Shanley, 1994). "Fort Peck tied its mission closely to the tribe's longstanding desire for better educational opportunities and self-determination policies" (Stein, 1992, p. 140).

By the end of 1993, the vision had become a reality. Fifteen years after opening, the college still occupies the old BIA building which has been completely renovated. In addition, FPCC occupies nine other buildings in Poplar and Wolf Point. Approximately 350 students enroll each semester to pursue general and vocational education leading to associate degrees in various fields. The college's budget has increased 1,000% over the past 10 years. In 1991, full accreditation was granted to FPCC by the Northwest Association of Schools and Colleges (Shanley, 1994, p. 3).

Fort Peck Community College serves the people of the Fort Peck Reservation and northeastern Montana. FPCC's academic program enables students to transfer credits to other post-secondary institutions. The college serves the
constituency of the reservation populations by maintaining an occupational training program based on the needs of the people living on and near the reservation and on potential employment opportunities available in the region. The college serves the people by initiating and supporting community activities, and organizations based on the needs and wishes of community members.

The expressed goals of Fort Peck Community College are to provide education, and vocational training for Native Americans and area residents. FPCC stresses those careers and occupations that have high employment potential. Programs strive to improve employee proficiency at local businesses, industries, and government agencies. The college has developed academic curricula that lead to the granting of the Associate of Arts, Associate of Science, and Associate of Applied Science degrees. Several vocational certificate programs are also offered. Credits earned in courses at FPCC are transferable to other state colleges and universities. Community service programs respond to the needs and requests of community members by offering evening classes and workshops (p. 8).

The mission of FPCC differs from that of its non-Indian counterparts. Like all community colleges, FPCC exists to meet the education and adult training needs of the community. As a tribal college, however, its role is broader, and its existence is directly and totally
interconnected to the life and well-being of the tribes. It carries a mandate to preserve tribal culture, history, and beliefs. Also, it is closely involved in efforts that contribute toward the positive economic development for the tribe and its members (p. 3).

Fort Peck Community College must respond to the demands that mainstream America places on its higher education institutions: efficiency, access, and quality. With limited resources, it must deliver services to sparse population and find efficient ways to provide a range of academic and vocational programs to a small number of students. The college is committed to helping students achieve their personal career goals through higher education. FPCC has a remarkable influence on the educational initiatives undertaken by tribal members. Unlike the period before the college's inception, the number of Indian students now pursuing higher education is nearly double that of the non-Indian population in the area (p. 5).

Fort Peck Community College deals with a far different student population than do mainstream educational institutions. A profile of the average FPCC potential student resembles a description of the under-served and disadvantaged in America. FPCC first-generation college student are older than the traditional college student. There are more women than men. Employment opportunities are at best sporadic. Entrance tests place students at low
reading, and math levels, despite average or above average intelligence. For most of these students, education has typically been a negative experience. Poverty, alcoholism, violence, and abuse are all common reservation experiences. Finally, many students harbor deep distrust and even resentment toward American society. These feelings are rooted in both historical fact and personal experience, and they pose barriers to personal, and academic advancement (p. 5-6).

Still, another major problem is recruitment and retention of quality faculty. Given the rural, tribal environment of the college and the keen national competition for Native American faculty, faculty recruitment and retention are difficult task for FPCC administrators (p. 6).

The mission of Fort Peck Community College stems from the philosophy that the tribes must provide higher education if they are to meet the unique educational needs of their people. Since many tribal members choose not to leave their homeland, it is necessary to bring education to them. Important functions of the college include the preservation of Indian culture, history, and beliefs and the perpetuation of this heritage among Indian people of all ages. The mission of FPCC reflects tribal values. Among these is the belief that self-awareness through education is the foundation necessary to build a career, create a lifestyle, and achieve a true sense of true pride. Although, FPCC does
not deny anyone the opportunity for higher education, the institution's primary purpose is service to the Indian population of Fort Peck Reservation (p. 8).

**Fort Peck Community**

The Fort Peck Assiniboine and Sioux Reservation is located in Northeastern Montana. There are approximately 10,000 enrolled tribal members of whom 6,000 live on the reservation. The reservation is 90 miles long and 40 miles wide occupying 2.1 million acres north of the Missouri River. The majority of the reservation occupants live in the two larger communities of Poplar and Wolf Point and in two smaller communities of Brockton and Frazer. The tribal government is seated in Poplar, the principle community with a population of 3,500. Also, located in Poplar are the Bureau of Indian Affairs and Indian Health Service. The reservation is rural and geographically remote. The economy is based on dry farming and cattle production and on the two tribally-owned manufacturing enterprises of West Electronics and Assiniboine and Sioux tribal Industries.

For 1993, the unemployment rate on the Fort Peck Reservation was 43.9%. Not surprisingly, poverty is a major problem with average per capita income being $4,778. The average for Roosevelt County is $7,751, compared to a state average of $11,213. Welfare programs play a pivotal role in the lives of many tribal members with over 1,000 families receiving General Assistance or Aid to Family with Dependent
Children, during an average year.

The Problem

Rowland (1994) has shown that the intervention by the mainstream culture has upset Native people's way of being. Rowland's study of the Northern Cheyenne demonstrates that "from a philosophical, and spiritual perspective, the Cheyenne perceive their existence, and purpose in life very differently from which is accepted in the larger non-Indian society" (p. 24) This may well apply to all Native people in the plains culture.

Tribal colleges have been set up to address some of these cultural needs. However, Hill (1992) found that tribal colleges are really promoting uncritical acceptance. Despite this and the great efforts that tribal colleges have made in educating Native people, the success rate for Indian people is still low. Therefore, a need exists to know more about how various groups of Indian people learn. Learning strategies offer one way of finding this source of information.

Purpose

The purpose of this study is threefold. First, it identified learning strategies of adults on the Fort Peck Reservation at different agency personnel such as the Bureau of Indian Affairs, Indian Health Service and Tribal
Employees. Second, it examined Fort Peck Community College students to determine if it is possible to discriminate between the highest and lowest achievers. Third, it identified four distinct groups of learners on the Fort Peck Reservation. Once they were identified, group and individual interviews were conducted to obtain additional data for a qualitative description of these groups.

Research Questions

This study described the learning strategies used by adults in everyday life situations in the Fort Peck Community. To accomplish this, the following research questions were asked:

(1) What is the learning strategies profile of the learners on the Fort Peck Reservation?
(2) Is it possible to use learning strategy scores as measured by SKILLS to discriminate between different groups of students at Fort Peck Community College when the students are grouped by grade point average?
(3) Is it possible to use learning strategy scores as measured by SKILLS to discriminate between groups in the Fort Peck community formulated by the demographic variables of gender, ethnicity, tribal affiliation, age, degree of traditionalism, and grouping of either college student or
community agency worker?

(4) What different groups of learners exist in the Fort Peck Community?

(5) If different groups of learners exist, how do they go about learning?

**Definition of Terms**

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

Fort Peck Reservation: The the second largest reservation in Montana which is the home of the Assiniboine and Sioux tribes and which is located in the northeast corner of the state.

Learning Strategies: "The techniques and skills that an individual elects to use in order to accomplish a specific learning task" (Fellenz & Conti, 1988, p.1).

Memory: Processes that are mental activities that store information and later make use of that information (Paul & Fellenz, 1993, p. 19).

Metacognition: "Metacognition is popularly conceived of as thinking about the process of thinking" (Fellenz & Conti, 1989, p. 9).

Metamotivation: "Tactics and techniques used by the learner to provide internal impetus in accomplishing learning tasks" (Kolody, 1997, p. 14)

Resource Management: The identification of appropriate resources, critical use of these resources, and the use of human resources in learning activities (Fellenz, 1993, pp. 36-37).

SKILLS: The Self-Knowledge Inventory of Lifelong Learning Strategies instrument for measuring learning strategies in the areas of Metacognition, Metamotivation, Memory, Critical Thinking, and Resource Management.

Tribal Colleges: Two-year, post-secondary, educational institutions in Indian communities which stress the
study of Native American culture and particularly the culture of the local tribe (Boyer, 1989).
CHAPTER 2

LITERATURE REVIEW

There are several factors that effect learning in the tribal community. The teaching-learning concept at the tribal colleges includes the adult learning factors of self-directed learning, real-life learning, learning style, and learning strategies. Since the tribal colleges primary purpose is serving adults, they are adult education institutions (Conti & Fellenz, 1989). With the ever-increasing student body and Native American faculty, tribal colleges have come a long way and have accomplished much since 1968. However, there is still much to be done in the tribal college movement.

Adult Learning

When adult educators came to realize that adults learn differently from children and youth, new methods of adult learning began to develop. Early contributions to this growing area of knowledge come from Lindeman's (1926), Thorndike (1928), Bryson (1936), and Sorenson (1938). These brought new interest and ideology to adult learning. By the 1980s, "the focus of the field had changed from adult education to adult learning" (Fellenz & Conti, 1989, p. 1).
In this process adult educators made a shift from methods of teaching, to methods of facilitating learning (Galbraith, 1990). "Learning means change. It is not simply a matter of accretion--of adding something. There is always reorganization or restructuring. Learning is not so much coming to terms with what is new, but reorganizing what has been learned" (Kidd, 1973, p. 15).

Because of the works of Cyril Houle, many theorist began to explore the individual learner. His work was focused on "what adults do to learn, how this learning is done, and what is the real life context of adult learning" (Hill, 1992, p. 20). In addition, Apps (1981) through his investigations found three criteria that adult educators should have: (a) knowledge of content, (b) knowledge of learners, and (c) knowledge of methods (Galbraith, 1990).

The focus on the individual learner is the result of shifting from adult teaching to that of adult learning. It is because of this shift, Kidd and others in the field of adult education have based their view of adult learning research (Fellenz, 1988). This emphasis on learning implies that adult education has moved from a field of practice to a field of study. This "shift to a field of study with the individual learner as the central concern opened whole new realm, such as self-directedness and individual development" (Fellenz & Conti, 1989, p. 1). The interest in learning styles and strategies fit into this trend.
Before theorists made the shift of their ideas from teaching to learning, instruction was in the form of imposing the will or knowledge upon another. This was by direct or indirect methods and always from the view of those doing the instructing (Kidd, 1973).

Malcolm Knowles is one of the most distinguished researchers in the field of adult education. Knowles' work with andragogy has inspired many in the field (Hill, 1992). Andragogy in its simplest form means "the art and science of helping adults learn" (Galbraith, 1990, p. 5). Although, andragogy can be approached in many fashions, the concept should be treated exactly for what Knowles claims it to be—a set of assumptions" (p. 91).

Adult learning takes place when adults come to realize that changes in their life occur by outside influences such as family settings, friends, change in jobs, new educational settings, and factors that change their role in life. When adults engage in a new learning task it is usually based on experience and information that the adult already has (Knox, 1977).

There are particular instances that relate to adjustment in the adult learning process; these are search for meaning, learning ability, interference, and feedback (Knox, 1979). "Effective practitioners typically understand that almost every adult is able to learn about almost any subject, given sufficient time and attention" (p. 15).
The adult independence of direction in learning and the use of personal experience as a learning source are two distinguishing characteristics of adult learning. In the past three decades, a number of theorists such as Gibb (1960), Miller (1964), Kidd (1973), and Knox (1977) have made attempts to identify principles that aid adult learning (Brookfield, 1986). Some of these are "learning must be problem centered, learning must be experienced centered, experience must be meaningful to the learner, the learner must be free to look at experience, goals must be set and pursued by the learner, and the learner must have feedback about progress toward goals" (p. 26).

Adults who participate in educational activities do increase their knowledge and content competence. Also, those who participate learn more effectively than those who do not participate. Furthermore, when adults assume the responsibility in a learning activity on a self-directed basis, the anticipation of this activity increases. When others share in the learning activity such as teachers and counselors, there is also an increase in learning (Knox, 1977).

Because of the constant flux in society, changes in such areas as employment, politics, religion, family relationships, and education have an impact on the field of adult education (Long, 1983). As McClusky has noted, "Our only hope lies in the realization of the fact that
continuous change requires continuous education. This is true of the individual, of the community, and the society at large" (Long, 1983, pp. 32-33). Furthermore, "helping adults learn is a transactional process in which the adult educator interacts with learners, content, other people, and material to plan and implement an educational program" (Galbraith, 1990, p. 3).

**Self-Directed Learning**

Self-directed learning is a "form of study in which learners have the primary responsibility for planning, carrying out, and evaluating their own learning experience (Caffarella, 1994, p. 152). Chene (1983) says self-directed learning "refers to situations where individuals set their own rules, although it is possible to conceive of autonomous people being free to act within the limits of preexisting rules" (Jarvis, 1992, p. 120).

Houle is the forerunner in developing the concept of self-directed learning (Houle, 1961). However, through Toughs work (1971, 1978) other theorists have become involved in self-directed learning. Tough concluded that 90% of all adults within one year find themselves in some type of learning activity (Long, 1983). This type of finding is supported by the Educational Testing Service national survey which found that one out of three adults between the ages of 18 and 60 participated in some form of adult
education (Darkenwald & Merriam, 1982). Likewise, Johnstone and Rivera in their national survey concluded that effect of self-direction was larger than thought and that self-education "is probably the most overlooked avenue to activity in the whole field of adult education" (Cross, 1981, p. 63).

Brookfield (1986) argues that "learning must be deliberate and purposeful, occur outside of designated educational institutions, receive no institutional accreditation, and be voluntary and self-generating" (p. 47). In addition, Candy (1991) indicates that there are various techniques that adults use to become self-directed learners. These learners could be isolated, living in some remote community, or learning from the media. Others might attend a college, university, or even vocational institutions. Knowles (1975) maintains that self-directed learning takes place with assistance from teachers, tutors and peers (Jarvis, 1992).

When defining a learning project, most researchers are satisfied with Tough's (1979) definition of "a series of related episodes, adding up to at least seven hours" (Hill, 1992, p. 26). When defined this way, Tough (1978) has found that the adult public participate in at least five learning projects each year (Knox, 1979, p. 1).

Coolican (1975) has made attempts to classify learning projects. She has categorized learning projects by most
popular and found the following order of popularity: vocational subjects, home and family, and hobbies and recreation. Penland has also categorized learning projects and grouped them as formal topics such as formal learning (i.e., history); practical topics in the area of business, clerical, and education; and intraself topics which include sensory awareness, religion, and psychology (Cross, 1981).

Adults who participate in a learning project usually do so with the intent of solving a problem and not for the purpose of learning a subject (Cross, 1991). Self-directed learning projects are "essentially nonthreatening because learners have complete control over the situation" (p. 133).

Because of the concern with learning competence, learning skills are "often embedded within other curricular content, so that learners may develop their competence in both the context and the process areas simultaneously" (Candy, 1991, p. 317). There are skills such as time management, critical thinking, goal setting, and problem solving that are essential to self-directed learning efforts (p. 318).

It has been argued that if learning in formal settings is different than learning in everyday or natural societal settings, then it has important implications for research, teaching, and theory building. It influences self-directed learning activities that are carried out in each context. The result is this affects the strategies implemented to
support, encourage, or facilitate the development of learning competence (Candy, 1991, p. 402).

Self-directed learning had been identified during the era of Plato. However, it has only taken root in the past four decades. Researchers such as Knowles, Tough, Houle, and Brookfield can be accredited with the blueprint of self-directed learning (Jarvis, 1992).

Because adults in learning situations are directing themselves, adult educators cannot predict how adults respond to new ideas, interpretations, or experiences. These are choices when self-directiveness is involved (Brookfield, 1986).

Real-life Learning

Real-life learning has become an area of interest in the past three decades by works such as Houle (1961) and Tough (1971). In recent years researchers as Nisser and Wagner and Sternberg (1984) have shown continued interest in the area of real-life learning (Fellenz & Conti, 1989, p. 3). The concept of real-life learning can be attributed to learning outside formal educational settings (Hill, 1992). Although there has been some discrepancy concerning "autodiduxy" which is self-instruction or self-directed learning that occurs outside the educational setting, awareness of real-life learning has strengthen by works as Houle and Brookfield (Candy, 1991).
Tough has done a vast amount of research in regard to self-directed independent learning which "goes on outside the formal organizations of adult education" (Griffen, 1983, p. 60). Real-life learning relates to learning situations which stem from experience and knowledge and which are distinguishable from traditional educational settings (Hill, 1992).

Learning trends that stimulate adult learning outside formal educational settings have an affect on real-life learning (Fellenz & Conti, 1989). Some of these settings are the "home, the work place, and means of transport" (Kidd, 1973, p. 236) and include other environments as "workshops, and interpersonal relationships" (Hill, 1992, p. 29).

Furthermore, some adults take the initiative to create learning projects for the purpose of self-knowledge, and not for college credit. Direction and planning on what to be learned by the adult is motivated by diagnosing and problem solving (Hill, 1992). "Adult learning occurs in diverse settings" (p.29), and it takes place in many forms of context (Brookfield, 1986).

Accreditation is not the only purpose of adult learning. Indeed, much of this "learning occurs within informal networks" (p. 150). Adults come together for one reason or another, "by some common concern, some shared interest, or some agreed-upon purpose (p. 151). These
activities promote challenges and rewards in problem solving and new forms of knowledge (Brookfield, 1986).

Real-life learning differs from traditional education in that the former usually occurs outside educational settings whereas traditional education takes place in a formal setting perspective (Wagner & Sternberg, 1984). Sternberg has identified some of the differences between real-life learning and learning in a traditional educational environment as: (a) solutions for real-life problems are usually trial and error and not structured as in the form of a curriculum; (b) real-life problems have some form of meaning or context which a curriculum format is impetus for solving problems; (c) real-life problems are usually but not necessarily group tasks ending in a conclusion which the traditional method encourages solving problems individually, either by teacher or text; (d) the significance of a problem is of interest to the learner, an academic approach is a must thing; and (e) real-life problems do not have hands-on resources to resolve their situations, the traditional student has many resources (Hill, 1992, p. 30).

Hill (1992) points out that colleges and universities give little recognition of adult intelligence outside educational settings. While higher education is now accessible to nontraditional students, their distant high school academic record is of little direct relationship to their current skills and abilities. Instead, the rich
reservoir of experiences which they bring to the learning situation is the important factor (Knowles, 1970).

In addition, the term intelligence is "almost impossible to define" (Glendenning & Stuart, 1995, p. 31). However, intelligence may be measured by "fluid intelligence" and "crystallized intelligence" (p. 31). The latter is what the general public would call general knowledge. Fluid intelligence is "the ability to process information" (p. 32). Experiences from real-life enhance fluid intelligence.

Although, it has been emphasized that adults do not receive credit for their educational efforts outside classroom academia, there are some institutions that do provide such credit. In 1978, a Carnegie Council Survey found "81 percent of the colleges and universities in the country awarded credit or advanced standing through the College-Level Examination Program (CLEP)" (Cross & McCartan, 1984, p. 80). This allows adults to demonstrate by examination that they have college classroom knowledge (Cross & McCartan, 1984).

Researchers have attempted to justify skills necessary for success in real-life. "Reading, speaking, writing, computation, and problem solving are task that relate to consumer economics, occupation, health, government, law, and using community resources" to base their definition of success in real-life (Hill, 1992, p. 31).
Learning Style


Associated with learning style is cognitive style. Cognitive style recognizes that "different individuals have distinctive manners, approaches, or style of perceiving and processing information" (Long, 1983, p. 69). However, cognitive style and learning style are not synonymous terms. "Cognitive style relates to the thought process, whereas, learning style relates to the ways in which people endeavor to learn" (Jarvis, 1987, p. 109).

Learning style research has come to a plateau (Hill, 1992). Learning style research is at a slow pace because learners' determine how fast and how far their development skill progresses (Knox, 1986). Furthermore, there are difficulties when attempting to apply learning style in teaching and learning because there is no acceptable definition to substantiate learning style (Hill, 1992). When using Kolbs' (1977) learning style inventory, individuals have not achieved consistent results (Jarvis,
1987). When using instruments for learning style, it must be remembered that each inventory will measure different things. According to how the designer has developed the instrument and how learning style is defined (Merriam & Caffarella, 1991).

There have been several attempts to classify types of learning and cognitive styles. For example, Messick and Associates document as many as 19 learning styles; Smith tabulates 17 existing learning style inventories; Squires notes that learning styles are typically represented as polar opposites on a range of dimensions (Peters, Jarvis, & Associates, 1991, p. 206).

Researchers such as Hill (1972), Kolb (1976), Price, Dunn and Dunn (1978) have investigated learning instruments with little reliability and validity. Other learning styles instruments receiving attention on Your Style of Learning and Thinking, Grasha-Riechmann Student Learning Style Scales and Canfield Learning Style Inventory. Most learning style instruments have proven to be insufficient when measuring learning style. In addition, learning style is seen as a "thinly developed theory and weak instrument, supported by fragmented research, often in settings not typical of adult education" (Bonham, 1989, p. 19). In addition, Grasha came to realize that as a result of the "inadequate reliability and validity of some instruments [to measure learning style], some researchers do not clarify instructional
procedures that would enhance certain styles" (Hill, 1992, p. 34).

Nevertheless, these instruments have been used in research projects. When using Canfield Learning Scale Inventory, it was found that learning styles did not enhance student achievement (Conti & Welborn, 1986). At the University of Wisconsin, Madison, Schmidt in his survey of returning adults found that they "prefer to work independently, they did not like competitive class activities, and they did not wish to develop social relations with their instructors or peers" (Brookfield, 1986, p. 133). An investigation of learning styles in regard to adult learning methods by Dubin and Okum (1973) found that there were "no conclusions regarding the appropriate teaching behaviors to be used with adults" (Brookfield, 1986, p. 129). Also, there was no one theory of learning where adults learning style were concerned (Brookfield, 1986).

Smith (1982a) emphasizes that learning style could be referred to as, "Bright Ideas for Learning" when workshops are held. He felt that learners would shy away from their typical learning style if headings as "Becoming a Self-Directed Learner" or "Learning How to Participate in Discussions" are used (Brookfield, 1986).

In recent years educators and trainers have become interested in "mathematics" which is in the area of how
adults learn how to learn (Brookfield, 1986). Others are interested in using terminology as "experiential learning" or simply "training" (Jackson & Caffarella, 1994, p. 62).

Learning style and cognitive style learning are in a theoretical stage, so it is difficult to measure them with an instrument or as an approach to a learning task (Long, 1983). Because theorists have many differing views of what constitutes learning styles, there is no one acceptable definition. Therefore, progress in this area is needed in order that adults can pursue learning activities with confidence (Hill, 1992). According to Dubin and Okum, Machie, Even, and More, there is a need for more research in the area of learning style, so that it can also be used with confidence in learning activities (Brookfield, 1986). Furthermore, research is needed in the area of adult teaching and learning process and how the teacher can better influence this process (Peters, Jarvis, & Associates, 1991).

**Learning Strategies**

In recent years, learning strategies have become notable through the concept of study skills. However, learning strategies are different than study skills (Fellenz & Conti, 1989). Many learning strategies exist because there are many different learning styles (Chipman, Segal, & Glaser, 1985). Learning styles are ways of approaching tasks that are characteristic of individuals, whereas
learning strategies are ways of handling particular tasks. "Styles are focused on the person, strategies on the task" (Schmeck, 1988, p. 185).

Since individuals approach learning in different ways, there are many definitions of learning strategies. These differences of learning style reflect the way learners proceed in their learning strategies (Hill, 1992). Learning strategies can be defined as "the way in which the learner selects, acquires, organizes, or integrates new knowledge" (Weinstein & Mayer, 1983, p. 4). Learning strategies are "the techniques or skills that an individual elects to use in order to accomplish a learning task (Fellenz & Conti, 1990, p. 3). Learning strategies are learner-centered and focus on the learning method which is most appropriate to resolve a particular learning task (Fellenz & Conti, 1990).

Although, there are similarities between learning style and learning strategies, there are essential differences. "Learning styles are seen as part of the internal, psychological framework of the learner and are not easily changed or change slowly" (Hill, 1992, p. 36). Learning strategies differ from learning style in that they are external aids such as "notes and lists, helping to reorganize information, and ensure retention" (Weinstein, Goetz, & Alexander, 1988, p. 299). Learning strategies also tend to promote "metacognition, memory, and motivational strategies (Fellenz & Conti, 1989, p. 8). Furthermore, if
learners are to except responsibility for their own learning, they must have proper skills and abilities to "actively engage appropriate metacognition, cognition, and affective (motivational) strategies" (Weinstein, Goetz, & Alexander, 1988, p. 141).

Learning strategies have become a branch of study skills through research by many researchers. One major researcher in this area is McKeachie (1988). He has noted that colleges and universities have become part of this moving force, in the use of learning strategies. "What is different today is that we have a better theoretical understanding of the reasons theses study strategies work. Cognitive psychology has developed a set of laboratory research studies, and theoretical concepts that are much closer to the natural learning settings in which study strategies have been applied" (Fellenz & Conti, 1989, p. 8).

Studies in this area with adults have found that a believe that "low" educational effects hinders one's understanding and competence. On the other hand, those who believe that they have "high" educational effects increase their competence (Knox, 1977).

Learning strategies have become an issue in recent years concerning the methodology of teaching. Metacognition, memory, and motivation are methods that concern teachers in teaching learning strategies to adults (Fellenz & Conti, 1989). According to Weinstein, for
learners to be effective in learning strategies they must become cognitively active in three ways; the learner must be "purposeful, goal directed, and strategic" (Weinstein, 1987, p. 590).

However, a barrier to the effective use of learning strategies is that home backgrounds or schools have not made an attempt to highlight alternative ways or options of adults to approaching learning situations. Education is directed to provide opportunities to carry out "elaboration, self-monitoring or other strategies, but seldom is any explicit attention given to helping students become aware that they have a choice in types of learning strategies that may be employed" (Weinstein, Goetz, & Alexander, 1988, p. 5). Because of this lack of preparation

It is also possible that in some instances, metacognition, thinking about thinking, may actually interfere with effective performance. After all, if one is making decisions about learning strategies and is conscious that one is trying different strategies, a certain amount of intellectual capacity must be taken up with his thinking and decision-making, which may simply result in overloading or distracting the student from business of studying. (McKeachie & others, 1984, p. 9)

Thus, researchers have defined learning strategies in various ways (e.g., Weinstein, 1987; Fellenz & Conti, 1989). However, the adult education research related to learning strategies has concentrated on the five strategy areas of matamotivation, metacognition, memory, resource management, and critical thinking (Fellenz & Conti, 1989). These
strategies are of importance in teaching/learning transaction of adults (Fellenz & Conti, 1989).

**Metamotivation**

There are several ways to approach motivation and these differ among various theorists. According to their assumptions about people and about what govern their actions. Energy and direction of behavior are two factors that govern motivation (Deci & Ryan, 1985, p. 3). Energy in motivation notes the needs that are innate to the organism and those that are acquired through interactions with the environment. Direction in motivation theory is interested in the process and structures of the behavior. This gives meaning to internal and external stimuli.

The learner is vital and the most important aspect of human motivation. Individual action enhances self-esteem; self-concept of determine thoughts and behaviors; and self-perception is one aspect of personality and behavior over time. The learner is at the heart of human experience and must be part of any theoretical formation in the field of human motivation (Sorrentino & Higgens, 1986, p. 286).

One motivation factor is enjoyment of the activity (Hill, 1992). However, there are other motivation factors concerning why individuals want to learn. These include such things as earning extra money by doing odd jobs, enhancing status in society, enhancing career opportunities, or enhancing quality of life and leisure (Wlodkowski, 1985,
Motivational learners work longer and harder and with more vigor and intensity than those who are not motivated. Also, when learners are motivated more concentration and care occur in the process of learning. This has a psychological affect to the learning material and enhance information processing (p. 5).

Furthermore, for learning to occur there must be the presence of ability and quality of instruction. No matter how motivated learners are they will be unable to accomplish these tasks (Wlodkowski, 1985).

Wlodkowski (1985) has developed a learning sequence based on a time continuum which he labeled as "The Time Continuum Model of Motivation." In this process, there is always a beginning, a middle, and an end. These three phases, according to Wlodkowski can enhance learner motivation. Beginning learning process are attitude needs; during learning process are stimulation affect; and ending learning process are competence reinforcement (pp. 60-61).

Metacognition

Metacognition refers to "the knowledge the learner has about his or her learning system and the decisions the learner makes bout how to act on information coming into the learning system" (Rhye & Andre, 1986, p. 206). In another sense, metacognition is "thinking about the process of learning" (Hill, 1992, p. 39).
Flavell (1979) has defined the distinction between cognitive strategy and metacognition strategy as the following: "Cognitive strategies are invoked to make cognitive progress, metacognitive strategies to monitor it" (Chipmen, Segal, & Glaser, 1985, p. 589). In addition, Biggs (1984) noted that "students must be aware of their motives and intentions, of their own cognitive resources, so that they are able to control those resources and monitor their consequence performance" (Schmeck, 1988, p. 320-321).

As learners come to mature, it is believed that metacognition is acquired throughout development as learners experience new and varied demands on their cognitive skills. By the activities and strategies used, learners control how much they learn (Rhye & Andre, 1986).

Furthermore, to develop positive results in accomplishing goals, there are certain techniques that ought to be used. When and how these techniques are used involves metacognition (McCormick, Miller, & Pressley, 1989). Metacognition is the central force in the technique and function of learning (Hill, 1992).

Weinstein (1987) relates that not only do students have to possess their own cognition processes, but they must also have abilities to control these processes. Content is how students' think such as their preferences, methods, and strategies. However, the control aspect of metacognition refers to the ability to organize, monitor, and modify the
thinking process (p. 591).

Schmeck (1988) tends to agree with this statement. Metacognition may be thought of as individuals' knowledge about their own cognitive processes, their abilities to control these processes by organizing, monitoring, and modifying them as a function of learning outcomes and feedback.

Comprehension monitoring is part of metacognition and requires several types of knowledge on part of learners. First, learners need to know something about themselves (i.e., what are their preferred learning styles or what is the best and worst times of the day for their learning). Second, learners must have some knowledge of the task they are undertaking (i.e., students must have an understanding of what is required by different learning tasks). Third, students must have knowledge of strategies that can guide learning or can be called upon when a problem is encountered (p. 295).

Metacognition is "an intricately interwoven system of knowledge" (Wellman, 1983, p. 32) and is not a source concerning factors about cognition (Garner, 1987). Flavell (1985) indicates there is no reason to think that metacognitive knowledge is qualitatively different from other kinds of knowledge. "Some metacognitive knowledge is declarative and some procedural," and Metacognition "is a slow process and builds up through experience" (Garner,
In a common sense approach concerning metacognition, learners accomplish what they are most familiar with and set up a sequence on how to go about the learning (Hill, 1992).

Metacognitive strategies include the designing of learning projects by one's learning style and the task at hand. They are concerned with the planning, monitoring, and regulating of one's learning activities" (Fellenz & Conti, 1993, p. 3).

Memory

Memory is a fascinating function of the complex brain. Memory refers to the ability "to retain information, to recall it when needed, and to recognize its familiarity when they latter see it or here it again" (Wingfield & Byrnes, 1981, p. 4). For years, researchers have been concerned with how memory works, how people remember, why some people have better memories than others, and why we remember some things, and not other things (Cohen, 1989, p. 2).

There are two methods of testing or measuring how well memory works. These are "self-reports" or introspections. The other is "natural experiments." The first is to record one's own observations about things they remember and forget. The second is to retain the methods of formal experimentation which is more representative of real life (Cohen, Eysenick, & LeVoi, 1986, p. 18).

Mnemonics are used to enhance recall. Two of these
approaches are chunking and loci. Chunking is "the organization of information into sets" (Paul & Fellenz, 1993, p. 23). It involves changes in the subjective unit of memory such as a sing-song rhyme used to recite the alphabet. Memorizing a speech is an example of using loci (Hill, 1992).

According to Wlodkowski (1985) short-term memory seems to be more of a problem for older adults than long-term memory. Problems that hinder older adults are "memorizing meaningless material, complex material, and learning something that requires reassessment of old learning" (Wlodkowski, 1985, p. 10).

Schema theory is a delicate part of memory. It allows recalling or remembering what is influenced by what is already known. It controls the pattern of remembering and forgetting. From schema theory, "the knowledge we have stored in memory is organized as a set of schemes or mental representations, each of which incorporates all that we have acquired from past experience" (Cohen, Eysenck, & LeVoi, 1986, p. 26). Schemes are items of information stored in memory having knowledge about objects, situations, events, or actions (p. 27).

Acquisition, retention, and retrieval are types of memory processes. Acquisition is information that should be remembered. When recall or recognition default in the memory process, this is known as encoding. Some problems of
encoding are attention, understanding in learning, strategy used to encode information, and practice. Retention is information which is acquired to be used at a latter time of remembering. Retaining and retrieving information may be a problem even if it has been adequately coded (Wingfield & Byrnes, 1981, p. 6-8). Retrieval is getting information out of storage when needed (Merriam & Caffarella, 1991).

Effective real-life memory has been categorized into three strategies (Hill, 1982). These are (a) organization of memory—strategies for encoding new information that intertwines with knowledge already stored, (b) external memory strategies— aids which require outside influences for recall such as checklists or appointment books, (c) application of memory strategies—internal cues that could enhance memory such as mnemonics. Mnemonics could include rhymes or training sequence of events (Hill, 1992, p. 43).

Critical Thinking

Critical thinking can be thought of as decision making, problem solving, logic, and rational thinking (Fellenz & Conti, 1989, p. 11). Brookfield (1987) suggests critical thinking "occurs when people question existing ideas or behaviors, or information that has been presented to them" (Brockett & Hiemstra, 1991, p. 134).

Knowledge is a foundation for critical thought. Richard Paul has pointed out that "knowledge is produced by thought, analyzed by thought, comprehended, organized,
evaluated, maintained, and transformed by thought" (Barnes, 1992, p. 5). Therefore, learners must possess their own knowledge and have critical reflection to distinguish a meaningful concept of their own surroundings (Hill, 1992).

In addition, critical thinking is important because to the learning process judgments are made by past experiences of existing situations. By deciding these judgments, learners question the authenticity of what is inevitable and, therefore, become responsible for their own beliefs and actions (Brockett & Hiemstra, 1991).

Brookfield (1987) has provided the framework for conceptualizing critical thinking in the field of adult education. He has selected four categories that would enhance critical thinking for adults. These are (a) test assumptions by not accepting conclusions but rather by identifying one's own conclusions; (b) assess content by realizing that what worked before may not work at the present or may not be appropriate because of change; (c) generating and testing alternatives by brainstorming or seeking group interaction, and (d) critical acceptance by not accepting anything on authority only or avoiding absolutes.

Resource Management

An approach to resource management may be "learning how to learn. With the mass amount of new educational technology, adults must adopt a systematic learning process
to all that is learned" (Klevins, 1972, p. 314). As changes occur in educational settings, adults must adapt to the numerous needs that are required of education. Not only do adult careers change but occupations as well change. Therefore, the need for adequate resource management becomes an educational factor (Cross, Valley & Associates, 1974). Resource management is the "identification of appropriate resources, critical use of such resources, and the use of human resources in learning (Fellenz, 1988, p. 3).

How learners manage these resources determines the solution of daily problems. There are a number of references available. Some are tapes, computers, and audiovisual material. Because of the amount of references available, choices must be made wisely (Hill, 1992). Learning strategies should be included in an adult learning curriculum that offers "techniques for identifying and acquiring appropriate learning resources" (Fellenz & Conti, 1989, pp. 4-5).

"The effectiveness of adult learning depends in part on the availability, appropriateness, and effectiveness of resources of learning" (Knox, 1977, p. 441). Effective learning resources help adults to

(a) become more interested in the topic; (b) understand major aspects of the topic around which details can be organized; (c) refer new information to current understanding; (d) persist in the learning activity; (e) register information so that it is retained as long as needed and can be recalled when needed; (f) obtain sufficient practice and reinforcement; (g) minimize
or thoughts that facilitate encoding in such a way that knowledge integration and retrieval are enhance" (Schmeck, 1988, p. 291). Even more so, these thoughts and behaviors establish organized plans to achieve a particular goal (Schmeck, 1998).

In the past, colleges and universities primary objective was to "remedy student deficiencies" in areas as "mathematics, reading, communication, and study habits and attitudes" (Weinstein, Goetz, & Alexander, 1988, p. 25). However, in recent years, learning strategies have been the focus the interest of many researchers (Weinstein, Goetz, & Alexander, 1988) in areas of the "significance of adult education, human resource management, and continuing professional education" (Jarvis, 1992, p. xi).

Furthermore, in the past 20 years, researchers have shown interest in the studies of "meaningful learning, natural learning settings, and learning in the real world" (Weinstein, Goetz, & Alexander, 1988, p. 4). Learning can be flexible to the desire of the learner (Hill, 1992).

Higher education has not been prepared for adult learners. However, it has begun to change in recent years. This is partially due to an increase in adult learners in higher education and a recognition of adult learning traits.

In any case, learning strategies are different than study skills. Study skills are more or less a replicate of a learning process (Chipman, Segal & Glaser, 1985). As
cognitive theory has re-emerged, "there has been an increasing role for the learner in accounts of learning and memory" (Weinstein, Goetz, & Alexander, 1988, p. 43).

Therefore, the characteristics of the individual learner will determine which learning strategy to choose (Klevins, 1972). Also, past experiences will affect how adult choose learning projects (Burnman, 1983). In addition, learning strategies change when new experiences are acquired (Hill, 1992). Which indicate "learning may be grounded in the student's basic learning style, they incorporate adjustments for various situational factors" (Conti & Welborn, 1986, p. 22).

Imel (1989) acknowledged Knowles (1980, 1984) with "developing the most cogent model underlying the assumption that teaching adults should differ" (Imel, 1989, p. 1) from teaching children. To help accomplish this, learning strategies should be taught according to the learning situation (Hill, 1992).

Thinking skills can be improved. Sternberg's (1979, 1982) model suggests "components, strategies, and metacomponents" to assist thinking skills, and therefore, can be learned by individuals (Hill, 1992, p. 49). "It seems logical that the learning strategies and individual elects to use in any learning situation will have a tremendous impact on the outcome of the learning effort" (Fellenz, 1988, p. 3).
Background for Tribal Colleges

Five hundred years have passed since educational efforts were imposed upon Native Americans. In the beginning of the 20th century, no consideration was given to Native Americans to choose their own destiny (Reyhner & Eder, 1989).

It was perceived that traditionalism prevented Native Americans from becoming educated. By the dissolution of boarding schools and reservation life, the thought was to "detribalize and individualize" them. The concept was that Indians would "leap into the mainstream of American life." The consequence to Native Americans was cultural disintegration and not cultural replacement as presumed (Reyhner & Eder, 1989, p. 1).

In Colonial America, colleges were charged with the task of Christianizing Native Americans. This function was included in the charters of Harvard and Dartmouth. William and Mary was chartered in 1693 based on the same approach (Reyhner & Eder, 1989). Because Native Americans were not considered Christian, it was believed they would lose their souls. Therefore, these institutions through education would prevent young Native Americans from becoming heathen. In fact, those involved in these institutions believed their culture to be superior. These efforts had little success, and Native Americans had little need for these methods which interrupted their way of being (Hill, 1992).
Native Americans always believed that education of their children should be kept within the families (Adams, 1974). Those who did attend and pursue education often found resistance from their local communities (McDonald, 1981). In the 1620’s, some Native American families were relocated in Virginia colony. It was thought that by this approach education would become more sufficient; however, this effort also failed (Szasz, 1988).

Indian reservations were initiated in the 1800’s. By this procedure, the U.S. government thought it would speed up the educational process. It was also thought that the reservation system would resolve other problems that hindered white culture (Adams, 1974). During this era, Native Americans were becoming more acculturated, and therefore, losing their natural ways. Educational efforts were becoming more prominent (Beck, Walters, & Francisco, 1977).

In 1869, the federal government began operating the contract school system. Thus, began the mission schools with various religious groups sending missionaries to the reservation (Reyhner & Eder, 1989, p. 64).

In 1868, Hampton Institute was started. This was primarily a vocational school for former slaves. In 1878, Indian prisoners of war were brought to the school. Hampton was a contract boarding school until 1912 (Reyhner & Eder, 1989).
In 1880, Bacone College in Oklahoma was one of the earliest schools for Native Americans. At Pembroke State University, North Carolina, a training program was introduced for the purpose of training Native American teachers. Furthermore, Haskell Indian School in Lawrence, Kansas, was founded in 1884. These schools were the first to receive government funding (Hill, 1992, p. 51).

The establishment of these institutions was an attempt to isolate Native Americans from their culture. Therefore, little participation was sought from tribal groups for the purpose of planning and operations from these institutions (Beck, Walters, & Francisco, 1977). As a result of the educational policy surrounding these types of schools, from 1885 to 1947 the Northern Cheyenne were prohibited from seeing their children except on Sundays, "after mass," and for Christmas vacation when they came home. Furthermore, they were forbidden to speak their own language (Ryhner & Eder, 1989, p. 68).

The Indian Reorganization Act, also known as the Wheeler-Howard Act, was passed in 1934. This act allowed Indian people to write their own constitution and by-laws, and it also gave rights for Native Americans to incorporate with charters from U.S. government. It also allowed for loans for Native American education (Szasz, 1977). In addition, under this act it stipulated for Native Americans to attend colleges and universities (Tucker, 1979).
The Higher Education Grant Program was created by the rewriting of the Indian Reorganization Act by the Bureau of Indian Affairs. As a result of this program, there were 16,000 Native American college students in 1976 (Eschwage, 1971).

During the 1970's the General Accounting Office surveyed 2,000 Native American college students. They found lower grade point averages, lower assessment test scores, and fewer credits had been acquired by freshman than other non-Indian college students (McDonald, 1981).

There were several reasons why some students did not excel in this higher education environment. Students found this new environment too competitive (Wollcott, 1960). Some students became discouraged because of home situations (McGrath, 1965). Other factors included cultural shock and low academic backgrounds (Eschewege, 1977). It eventually became evident that students from reservation schools could not sustain in higher education (McDonald, 1981).

The past four decades and specifically the late 1960's were a time of joy and excitement for Native American education. It became overwhelmingly clear among Native Americans and non-Indian government officials that educational policies would have to be changed, if educational improvements were to be changed. These changes would have to be at the local level (Hill, 1992).

The Indian Education Act of 1972 allowed for local
control of education and further educational opportunities for Native Americans. This act provided supplementary funds to those schools with Native American populations, provided for funding in certain curriculum for undergraduate and graduate students, and provided for community-based education (Szasz, 1977).

Because of these educational changes on the local level, the birth of the tribal college began (McDonald, 1981). There were other factors that influenced the tribal college movement such as

The election of John Kennedy as president and his message of helping others; the civil rights movement; Johnson's war on poverty;... higher education reaching out to the reservations; young Indians demanding a better change at securing the American dream of the good life; and the vision that a community college could work on an Indian reservation. (Stein, 1990, p. 2)

The number of tribal colleges has grown rapidly. Native American tribes chartered 13 tribally-controlled colleges by 1975 (Oppelt, 1984). In 1980, 17 tribal colleges were in existence (Clifford, 1980). In 1994, two new institutions joined the American Indian Higher Education Consortium (AIHEC). Menominee Nation and Leech Lake Tribal Colleges were both accepted as full members of the consortium. There are now 31 tribal colleges in existence.

Surveys and studies indicate that tribal colleges meet the needs of Native Americans who want to pursue college degrees. "They are meeting the unique educational needs of reservation American Indians better than existing
institutions of higher education" (Oppelt, 1984, p. 41).

The enrollment of tribal colleges has increased annually. In 1990, over 10,000 full and part-time students were enrolled (Boyer, 1989, p. 2).

These colleges serve more Native Americans than any other component of American postsecondary education. A reason for this success is that the educational mission of the colleges directly addresses Native American needs and interest. These institutions stand out as the most significant and successful development in Indian education history. (Hill, 1992, p. 58)
CHAPTER 3

METHODS AND PROCEDURES

Design

This case study investigated adult learners on the Fort Peck Reservation, Montana. A case study is "an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a social group" (Merriam, 1988, p. 9). This case study included the Fort Peck Community College students, and Fort Peck agency personnel such as Bureau of Indian Affairs, Tribal Health Service, and tribal employees. This case study investigated the real-life learning strategies of students and agency employees. Additionally, learning strategies were used to determine if the most successful and least successful students could be measured by grade point average.

Furthermore, this descriptive study investigated environments in natural settings. "A descriptive study determines and reports the way things are. A type of descriptive research involves assessing attitudes or opinions towards individuals, organizations, events, or procedures" (Gay, 1981, p. 12). Descriptive data are "typically collected through a questionnaire survey, an interview, or observation" (p. 153). "The case study is
flexible and does not require a particular method for data collection or analysis....A qualitative case study design approach allows for insight, discovery, and interpretation rather than hypothesis testing for the researcher" (p. 153).

Sample

Montana has a population of 799,065. Roosevelt county has a population of 10,999. Fort Peck Reservation which lies inside Roosevelt county boundaries has a Native American population of 9,287. Poplar is the capital of the reservation with a population of about 3,500.

A cluster sampling approach was used to obtain the sample. "Cluster sampling is sampling in which groups, not individuals, are randomly selected. All the members of this selected group have similar characteristics" (Gay, 1992, p. 132). Most of the participants, students and employees, returned their survey within one-half hour to one hour after receiving them. Because of class time schedules and different location of agencies some surveys were returned by mail.

The sample for this study was composed of two groups. One group was made up of 89 students who were enrolled at Fort Peck Community College during Fall semester of 1996. Of the 311 students at Fort Peck Community College, 27.9% completed the survey. Like the student profile, there were more females (70.8%) in this sample than males (29.2%).
Most in the group were Native American (79.5%) with 19.3% Caucasian and with one person being of another ethnic origin. Over half (59.7%) of the group who indicated their tribe were Sioux; slightly less than a quarter (23.6%) were Assiniboine; and 16.7% declared other. Nearly one-fifth of the group did not indicate a tribal affiliation. The average age of the group was 30.6 years of age; the age range was 17 to 54 with a standard deviation of 9.4. The overall grade point average (GPA) for the group was 2.9; the GPA range for the group was .71 to 4.0 with a standard deviation of .81.

The respondents were asked to rate their degree of traditionalism on a 10-point Likert type scale with 1 as low and 10 as high. All but seven participants responded to this item. Only six rated themselves at four or below. Nearly half (45.2%) rated themselves as 5 (15.9%) or as 6 (29.3%). One-fifth (20.7%) rated themselves at the highest level of traditionalism with a 10. Over one-fourth (26.9%) rated themselves toward the traditional end with a rating of 7 (9.8%), 8 (13.4%), or 9 (3.7%). The average rating of traditionalism for the group was 6.9.

The other group consisted of employees at community agencies. Of the 131 employees of different community agencies such as Bureau of Indian Affairs, Tribal Health, and Fort Peck community employees, 87.2% completed the survey. There were slightly more females (58.9%) in this
group than males (41.1%). Overwhelmingly, the group was made up of Native American (94.4%) with only 5.6% Caucasian. Over three-fourths (77.3%) of the group who indicated their tribe were Sioux; 13.6% were Assiniboine; and 9.1% declared other. Only two people did not indicate a tribal affiliation. The average age of the group was 41.2 years of age; the age range was 19 to 67 with a standard deviation of 11.1.

In rating their degree of traditionalism on a 10-point Likert type scale, only 11 (12.2%) rated themselves at four or below. Nearly half (45.6%) rated themselves as 5 (16.7%), 6 (15.6%), or 7 (13.3%). Over one-fourth (27.8%) rated themselves at the highest level of traditionalism with a 10. Only 3 (3.3%) rated themselves with a 9. The average rating of traditionalism for the group was 6.9.

Instrument

The Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS) was used as the instrument to measure real-life learning strategies of the participants in the Fort Peck community. This instrument was developed and proven to be reliable and valid by graduate faculty and doctoral fellows at the Center for Adult Learning Research, Montana State University (Conti & Fellenz, 1991).

The SKILLS instrument intent is to measure adult learning processes that are essential for assessment in
real-life learning. These essential parts are best categorized into five areas of Metacognition, Metamotivation, Memory, Critical Thinking, and Resource Management (Fellenz, 1990).

SKILLS consists of six scenarios from real-world situations that are based on Shirk's (1990) categories for self-directed learning projects. Within each of these scenarios, a series of 15 questions is included that matches each of the learning strategies being examined. Metacognition has questions that deal primarily with Planning, Monitoring, and Adjusting to the learning process. Metamotivation has questions that deal with Attention, Reward/Enjoyment, and Confidence. Memory has questions that are about internal Organization of Information, Use of External Aids, and Application to the learning process. Critical Thinking has questions dealing with Testing Assumptions, Generating Alternatives, and Conditional Acceptance of new information being process. Resource Management is the final area that has questions concerning the Identification of Resources, Critical Use of Resources, and Use of Human Resources in the learning process. These questions determine if individuals would select a certain strategy for resolving particular learning problems in real-life situations.

An instrument's validity is addressed if an instrument measures what it is intended to measure. Construct,
content, and criterion-related validity are the three types of validity related to instruments in educational research (Kerlinger, 1973). Construct and content validity are the two types that have been established for SKILLS (Conti & Fellenz, 1991).

Construct validity assesses the theory of the instrument which measures a particular aspect of human behavior (Borg & Gall, 1993). Construct validity for SKILLS was established through literature reviews and obtaining judgement from various adult educators, and professors of educational psychology. Extensive literature reviews were conducted in each of the learning strategy areas to determine the exact concepts to be included in each area. At a summer institute at the Center for Adult Learning Research in Bozeman, Montana, a group of adult educators reviewed the instrument and the theory underlying its construct. Adult educators and educational psychologists Wilbert McKeachie and Robert Sternberg reviewed this instrument. The consensus of the reviewers was that SKILLS effectively addressed the five theoretical constructs of metacognition, metamotivation, memory, critical thinking, and resource management (Conti & Fellenz, 1991).

Content validity is how well items in the instrument represents the content being tested. Item validity and sampling validity are both required for content validity (Gay, 1981). Item validity for SKILLS was established by
field testing SKILLS in a variety of locations and settings throughout the United States. These locations and settings included adult basic education programs, undergraduate and graduate university courses, museums, health-care providers, continuing education programs, and elderhostel programs. Responses to the two sets of six scenarios were collected from 253 respondents. The field testing consisted of a group with an age spread of 17 to 73 years of age and with the mean age of about 37 years of age. Approximately two-thirds (62.8%) of the participating population were female. Of the total number of respondents, about three-fourths (73%) had graduated from high school. The respondents to the field test represented a variety of locations, residential areas, and population levels.

A list of the types of population areas where the respondents were from are as follows: large cities over 250,000—29.8%, cities of 100,00 to 250,000—5.3%, towns of 1,000 to 20,000—21.8%, and rural areas under 1,000—9.6%. English was the primary language spoken (91.4%) of the respondents. These diverse group of respondents were from cities, towns, and homes located in the West, Southwest, and Midwest regions of the United States. The respondents were from a range of occupations representing educators, students, clerical workers, farmers, blue-collar workers, and homemakers. Responses from the field test substantiated the findings of the expert adult educators.
Reliability of an instrument is "the degree to which a test consistently measures whatever it measures" (Gay, 1992, p. 161). The reliability for SKILLS was established by correlating two equivalent forms of SKILLS which were administered to the same group. This is the "most acceptable and most commonly used estimate of reliability" (Gay, 1981, p. 119). The coefficient for these two forms was .71. Two other correlations were computed. These were the split-half test of reliability using the Guttman method and the Spearman-Brown formula for reliability. Both correlations were .83. All correlations are in the acceptable range (Gay, 1981). Hence, SKILLS was determined as a "reliable instrument for assessing adult learning strategies in real-life situations" (Conti & Fellenz, 1991).

Procedures for Data Collection

Demographic and educational data were obtained with a demographic information form. These forms were given to Fort Peck Community College faculty to be dispensed among their students that were enrolled in their class. Demographic data included name, social security number, gender, ethnic background, tribal affiliation, age, degree pursued, and a self-analysis asking students to rate themselves as a traditional or non-traditional Native American on an 10-point scale. Demographic data collected from agency employees included name, social security number,
gender, ethnic background, tribal affiliation, age, and a self-report asking the employees to rate themselves as a traditional or non-traditional Native American on an 10-point scale. Raw data obtained was entered into dBase for storage. Sorting and transfer into Statistical Package for the Social Sciences (SPSS) for analysis came at a later date.

The SKILLS answer sheet was a modification of that developed by the faculty at the Center for Adult Learning Research at Montana State University for the use with the SKILLS instrument. The purpose of this answer sheet was to facilitate the logical and comprehensive recording of SKILLS answers by participants.

The instructions for completing SKILLS are designated at the top of the answer sheet. The instructions for SKILLS were administered to Fort Peck Community College faculty before they gave the SKILLS to their students. The students were to be informed that there were six scenarios to be examined. From these, the students chose four scenarios that they would use in real-life situations. There were 15 questions to be rated for each scenario. From these, they selected the five that they definitely would use, the five that they might possibly use, and the five that they would not likely use. Responses were to be placed individually on spaces provided on the answer sheet. This procedure was also used for agency employees.
instrument and to answer questions pertaining to the instrument.

The college instructors and agency employees were given specific explanations (a) of the purpose of the study, (b) about what the data would be used for, and (c) about the confidentiality of the data and study. The SKILLS instrument and answer sheet were given to instructors and employees. The demographic form requested a social security number if the student gave consent for their voluntary participation in the study. In addition, by giving social security number the students gave authorization to release their grade point average from the registrar for inclusion in the study.
CHAPTER 4

FINDINGS

Profile for Learning Strategies

The profile of learning strategy preference was produced for both Fort Peck Community College and Fort Peck agency employees. No one learning strategy over shadowed another. In scoring SKILLS, the respondents receive three points for each item that they would Definitely Use, two points for one that they might Possibly Use, and one point for an item that they would Not Likely Use. Since there are four scenarios which each have one learning strategy item in them, the range of the total possible score for each learning strategy is 4 to 12. Since there are three learning strategies in each of the learning strategy area, the range of these learning strategies are 12 to 36. All the group means were in the middle of the range (see Table 1). Resource Management was the learning strategy area most preferred by the participants, and Metamotivation was the least of the strategy area that was used.

The 5 learning strategies areas are composed of 15 individual learning strategies. The distribution of scores at Fort Peck Community College revealed that Metacognition Planning, Identification of Resources from the Resource Management learning strategy area, and Use of External Aids
from the Memory learning strategy area were the three

Table 1. Means of Learning Strategies Areas of SKILLS Fort Peck Community College Students

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Management</td>
<td>25.91</td>
<td>2.93</td>
<td>20-33</td>
</tr>
<tr>
<td>Memory</td>
<td>23.83</td>
<td>2.62</td>
<td>17-31</td>
</tr>
<tr>
<td>Metacognition</td>
<td>23.79</td>
<td>2.36</td>
<td>18-30</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>23.32</td>
<td>2.88</td>
<td>16-29</td>
</tr>
<tr>
<td>Metamotivation</td>
<td>22.78</td>
<td>3.33</td>
<td>12-29</td>
</tr>
</tbody>
</table>

learning strategies used by the participants. Memory Application and Metamotivation Reward/Enjoyment strategy were the two least strategies used by the participants (see Table 2). Resource Management was the learning strategy most preferred by the participants, and Metamotivation was the least of the learning strategy area that was used by the employees.

Table 2. Means of Individual Learning Strategies of SKILLS Fort Peck Community College Students

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>9.42</td>
<td>1.52</td>
<td>6-12</td>
</tr>
<tr>
<td>Identification of Resources</td>
<td>9.14</td>
<td>1.51</td>
<td>6-12</td>
</tr>
<tr>
<td>Use of External Aids</td>
<td>9.04</td>
<td>1.72</td>
<td>5-12</td>
</tr>
<tr>
<td>Attention</td>
<td>8.76</td>
<td>1.85</td>
<td>4-12</td>
</tr>
<tr>
<td>Critical Use</td>
<td>8.46</td>
<td>1.56</td>
<td>5-12</td>
</tr>
<tr>
<td>Testing Assumptions</td>
<td>8.44</td>
<td>1.55</td>
<td>4-12</td>
</tr>
<tr>
<td>Use of Human Resources</td>
<td>8.31</td>
<td>1.66</td>
<td>5-12</td>
</tr>
<tr>
<td>Organization</td>
<td>8.11</td>
<td>1.57</td>
<td>5-12</td>
</tr>
<tr>
<td>Generate Alternatives</td>
<td>7.71</td>
<td>1.66</td>
<td>4-11</td>
</tr>
<tr>
<td>Monitoring</td>
<td>7.19</td>
<td>1.68</td>
<td>4-12</td>
</tr>
<tr>
<td>Adjusting</td>
<td>7.17</td>
<td>1.56</td>
<td>4-11</td>
</tr>
<tr>
<td>Conditional Acceptance</td>
<td>7.15</td>
<td>1.96</td>
<td>4-12</td>
</tr>
<tr>
<td>Confidence</td>
<td>7.01</td>
<td>1.59</td>
<td>4-11</td>
</tr>
<tr>
<td>Reward/Enjoyment</td>
<td>7.00</td>
<td>1.66</td>
<td>4-11</td>
</tr>
<tr>
<td>Memory Application</td>
<td>6.67</td>
<td>1.66</td>
<td>4-11</td>
</tr>
</tbody>
</table>
A similar profile was constructed for the personnel from the various agencies from whom data was collected. The order of the responses from those working in the agencies was the same as for the tribal college students (see Table 3).

Table 3. Means of Learning Strategies Areas of SKILLS Fort Peck Agency Employees

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Management</td>
<td>26.43</td>
<td>2.76</td>
<td>21-33</td>
</tr>
<tr>
<td>Memory</td>
<td>23.94</td>
<td>2.96</td>
<td>17-32</td>
</tr>
<tr>
<td>Metacognition</td>
<td>23.87</td>
<td>2.55</td>
<td>19-29</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>22.90</td>
<td>2.49</td>
<td>16-28</td>
</tr>
<tr>
<td>Metamotivation</td>
<td>22.24</td>
<td>3.10</td>
<td>14-29</td>
</tr>
</tbody>
</table>

The distribution of scores among agency employees revealed that Metacognition Planning and Critical Use of Resources from the Resource Management learning strategy area were the two learning strategies used by participants. Conditional Acceptance, which is a Critical Thinking strategy, and Reward/Enjoyment, which is a Metamotivation learning strategy, were the two least strategies used by agency employees (see Table 4).

**Discriminant Analysis**

Discriminant analysis is a statistical technique which allows the investigation of the differences between groups in relationship to several variables at the same time (Klecka, 1980, P.7). In this approach, the emphasis is upon analyzing the variables together rather than one at a time.
Table 4. Means of Individual Learning Strategies of SKILLS Fort Peck Agency Employees

<table>
<thead>
<tr>
<th>Area</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>9.50</td>
<td>1.66</td>
<td>5-12</td>
</tr>
<tr>
<td>Critical Use</td>
<td>8.90</td>
<td>1.60</td>
<td>4-12</td>
</tr>
<tr>
<td>Identification of Resources</td>
<td>8.86</td>
<td>1.44</td>
<td>6-12</td>
</tr>
<tr>
<td>Use of External Aids</td>
<td>8.72</td>
<td>1.87</td>
<td>5-12</td>
</tr>
<tr>
<td>Attention</td>
<td>8.64</td>
<td>1.64</td>
<td>5-12</td>
</tr>
<tr>
<td>Use of Human Resources</td>
<td>8.60</td>
<td>1.70</td>
<td>5-12</td>
</tr>
<tr>
<td>Testing Assumptions</td>
<td>8.41</td>
<td>1.64</td>
<td>4-12</td>
</tr>
<tr>
<td>Organization</td>
<td>8.32</td>
<td>1.71</td>
<td>4-12</td>
</tr>
<tr>
<td>Generate Alternatives</td>
<td>7.79</td>
<td>1.58</td>
<td>4-12</td>
</tr>
<tr>
<td>Monitoring</td>
<td>7.27</td>
<td>1.60</td>
<td>4-12</td>
</tr>
<tr>
<td>Adjusting</td>
<td>7.10</td>
<td>1.57</td>
<td>4-12</td>
</tr>
<tr>
<td>Memory Application</td>
<td>6.90</td>
<td>1.80</td>
<td>4-12</td>
</tr>
<tr>
<td>Confidence</td>
<td>6.86</td>
<td>1.54</td>
<td>4-11</td>
</tr>
<tr>
<td>Reward/Enjoyment</td>
<td>6.74</td>
<td>1.73</td>
<td>4-12</td>
</tr>
<tr>
<td>Conditional Acceptance</td>
<td>6.70</td>
<td>1.46</td>
<td>4-10</td>
</tr>
</tbody>
</table>

"Discriminant analysis is a statistical technique which allows the researcher to study the difference between two or more groups of objects with respect to several variables simultaneously" (p. 7). It is used when "two or more groups exist which we presume differ on several variables and... [when] those variables can be measured at the interval or ration level" (p. 8).

Unlike univariate analysis which examine individual variables separately and allow them to be disassociated from the total person who is a synergistic can position of these variables, discriminant analysis examines people on set of variable to determine if any of them interact in a combination that can explain the person's placement in the group. (Conti., 1993, P. 91)

Discriminant analysis can be used either to describe the way groups differ or to predict membership in a group. In this study, discriminant analysis was used to
investigate if learning strategies could be used to identify the ways groups of learners on the Fort Peck Reservation differed. For purposes of analysis, the 179 participants were grouped according to success in colleges measured by grade point average, gender, tribal affiliation, age, and degree of traditionalism.

Two criteria were used for determining if the discriminant analysis was useful for identifying the differences between the groups (Conti, 1993, p. 93). The first criteria was "that the discriminant function produced by the analysis is describable using the structure coefficients of the analysis" (p. 93) with a value of .3 or greater. The other criteria was that the function had to correctly classify at least one-half of the cases beyond the chance placement which might occur in the groups (Kolody, 1997, p. 69; Korinek, 1997, p. 78).

"If a discriminant analysis can be described in a meaningful way and if it is efficient in correctly classifying cases into the proper group, then it is judged as good and useful" (Conti, 1993, p. 93). Hill (1992) found that analyses which use a large number of variables can produce functions which have high classification percentages but which offer no clear description power. However, other analyses produce functions which are describable but which have low classification power. Thus, the combination of these two criteria requires first the function be both
clearly description and highly accurate in order to be used (Conti, 1993, pp. 92-93).

**Grades**

In order to determine if learning strategy preferences differed between high and low academic achievers the students from Fort Peck Community College were divided into the two groups according to their grade point averages (GPA). The two groups were the 15% with the highest grades and the 15% with the lowest grades. Thus, the groups represented those that were approximately one standard deviation above and below the mean (Hill, 1992). The grade point average for the group with the low GPA's ranged from .71 to 1.91. The grade point average for the group with the high GPA's ranged from 3.83 to 4.0. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies from SKILLS which include Planning, Monitoring, Adjusting, Attention, Reward/Enjoyment, Confidence, Organization, Using External Aids, Memory Application, Testing Assumptions, Generating Alternatives, Conditional Acceptance, Identification of Resources, Critical Use of Resources, and Using Human Resources. The elements used to distinguish among groups are referred to as discriminating variables (Klecka, 1980, p. 9). "These variables must be measured at the interval or ratio level, so that means and variances can be calculated" (p. 9).
The pooled within-groups correlations are the correlations for the variables when those responding to the learning strategies were placed in their groups. In multivariant analysis, it is important that the variables in the analysis do not share a great deal of variance. High correlations among variables indicate that they are sharing a common variance. In order to check for this interdependence, the pooled within-groups correlation matrix of discriminating variables was examined. The within a group matrix reveals how the discriminant function is related to the variables within each group in the analysis. The examination of the 105 coefficients in this analysis should showed that all were at a sufficiently weak level to remain in the analysis. Only 2 coefficients were the .3 level; 9 were at the .2 level; and the remaining 94 were all below the .2 level. Thus, the variables in this discriminant analysis were not related to each other and did not share a common variance.

Stepwise selection was used to determine which of the 15 discriminating variables added most to the difference in the groups which were formed by the grade point average of the tribal college students. This procedure identifies the best set of discriminating variables. "One way to eliminate unnecessary variables is by using a stepwise procedure to select the most useful discrimination variables" (Klecka, 1980, p. 53). Although, there are various methods of
selecting variables for inclusion in the discriminant analysis, Wilk's lambda was chosen for this analysis because it takes into consideration both the differences between the groups and the cohesiveness within the groups (P. 54). Because of its approach to variables selection, Wilk's lambda is commonly used in discriminant analysis studies in education. As result of this stepwise procedure, nine variables were included in the discriminant function. The following discriminating variables and their corresponding Wilk's lambda values were selected: Use of Human Resources (.64), Monitoring (.52), Confidence (.39), Reward/Enjoyment (.37), and Memory Application (.35). The other 10 variables included in the analysis did not account for enough variance to be included in the discriminant function.

Standardized discriminant function coefficients are used to indicate which variables contribute the most to the discrimination between the groups. By examining the standardized coefficients, the importance of each variable to the overall discriminant function can be obtained. The standardized canonical discriminant function coefficients were as follows: Monitoring (-.79), Reward/Enjoyment (.50), Confidence (.60), Memory Application (.33), and Use of Human Resources (1.21).

The discriminant function which was used to classify the cases into these groups was as follows:

\[ D = .46 \text{ Confidence} - .42 \text{ (Monitoring)} + .28 \text{ (Reward/Enjoyment)} + .18 \text{ (Memory Application)} + \]
The group centroid for high GPA group was -1.32, and it was 1.32 for the low GPA group. The canonical correlation is a measure of the degree of association between the discriminant scores and the groups, and it was .81 for this study. When this is squared, it indicates that the groups explain 65.6% of the variation in the discriminant function.

The percentage of cases correctly classified shows how accurate the discriminant function was on grouping the respondents. This discrimination function was 88.46% accurate in classifying cases. It correctly placed 12 (92.3%) in the group with the lowest grades and 11 (84.6%) in the group with the highest grades. Since there were two groups, a 50% probability existed for chance placement in the groups. Thus, the discriminant function was a 38.46% improvement over chance in predicting group placement. Since this was above the 75% correct placement criterion, this function was judged useful for discriminating between those with the highest and lowest grade point averages.

The coefficients in the structure matrix show the similarity between each individual variable. The highest coefficients have the strongest relationship to the discriminant function because they show how closely the variable and the overall discriminant function are related. In a descriptive study, this is the most important information related to discriminant functions which satisfy
the acceptance criteria. This is because the purpose of the analysis is to describe the process that distinguishes the groups from each other. In this naming of the function, variables with coefficients of approximately .3 and above are generally used in the interpretation (Conti, 1993, p. 93).

Two variables had sufficient coefficients to be included in this interpretations of the meaning of the discriminant function. They were Use of Human Resources (.55) and Planning (-.29). The correlation between the discriminant function and the Use of Human Resources is nearly twice as strong as that of Planning. In addition, these learning strategies are opposing traits; when one is used highly, the other is low. The means for the group with the high GPA's were 9.62 on Planning and 7.23 on Use of Human Resources. The means for the group with the low GPA's were 9.00 for Planning and 9.15 for Use of Human Resources.

Based upon the structure matrix, this function was named Responsive Networking. The dominant variable in this function is Use of Human Resources. This Resource Management strategy involves integrating others into the social and political processes of learning. It is modified by Metacognitive Planning which focuses on analyzing the best way for one's self to proceed with a specific learning task. However, this modification is in the negative direction. The integration or networking with others is not
controlled by a sense or concern for planning the best way to accomplish one's own learning task. Those who get the lowest grades in the group engage in Responsive Networking. Those who get the highest grades in the group refrain from it. Thus, the process that distinguishes the most successful from the least successful students is the degree to which they engage in Responsive Networking.

Thus, a discriminant analysis was calculated to investigate if it was possible to use SKILLS scores to discriminate between Fort Peck Community College students with high and low grade point averages. Based on the high percentage of variance explained by the function discriminating between the groups and on the high percentage of accuracy of the prediction into the groups by the discriminant function, it was determined that it is possible to use learning strategies to discriminate between groups categorized by grade point average. The process that distinguishes these groups is Responsive Networking.

**Gender**

In order to determine if learning strategy preferences differed between the gender of learners on the Fort Peck Reservation, the respondents divided into male and female groupings. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

As in the previous analysis, the pooled within-groups
matrix was examined. The examination of the 105 coefficients in this analysis showed that all were at sufficiently weak level to retain the variables in the analysis. Only 2 coefficients were at the .3 level; 11 were at the .2 level; and the remaining 92 were all below the .2 level. Thus, the variables in this discriminant analysis were not related to each other and consequently were not sharing a common variances.

Stepwise selection was used to determine which variables added most to the difference in the groups which were formed by gender groupings. As a result of this Wilk's lambda stepwise procedure, nine variables were included in the discriminant function. The following discriminating variables and their corresponding Wilk's lambda values were selected: Use of External Aids—.93; Organization—.90; Use of Human Resources—.88; Memory Application—.87; Reward/Enjoyment—.86; Confidence—.85; Critical Use of Resources—.84; Adjusting—.83; and Conditional Acceptance—.83. The other six variables included in the analysis did not account for enough variance to be included in the discriminant function.

The standardized coefficients explain the contribution each discriminating variable makes to the discriminant function. The standardized coefficients for this function which discriminated between the genders were as follows: Use of External Aids (--.56); Organization (.64);
Reward/Enjoyment (.53); Use of Human Resources (.44); Memory Application (.31); Critical Use of Resources (.29); Confidence (-.27); Adjusting (.20); and Conditional Acceptance (.20).

The discriminant function which was used to classify the cases into these groups was as follows:

\[ D = .13 \text{(Adjusting)} + .31 \text{(Reward/Enjoyment)} - .17 \text{(Confidence)} + .40 \text{(Organization)} - .32 \text{(Use of External Aids)} + .18 \text{(Memory Application)} + .11 \text{(Conditional Acceptance)} + .18 \text{(Critical Use of Resources)} + .26 \text{(Use of Human Resources)} - 8.0. \]

The group centroid for the male group was .612, and it was -.332 for the female group. The canonical correlation was .41 for this study. When this is squared, it indicates that the groups explain only 2% of the variation in the discriminant function.

The percentage of cases correctly classified was 63.1%. The classification correctly placed 63 (61.9%) in the male group, and 116 (63.2%) in the female group. Thus, the discriminant function is an 13.1% improvement over chance in predicting group placement. Consequently, it demonstrates that gender cannot be distinguished on the basis of learners' performance for learning strategies.

Three variables in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were as follows: Use of External Aids (-.59); Memory Application (.38); and Organization (.34). Because of the low percentage of
variance explained by the discriminant function and the lack of accuracy in classifications, the discriminant function was not named. This was not necessary because "one need not pursue further analysis of any functions which are eliminated" (Klecka, 1980, p. 41) by not meeting the criteria for being judged useful.

Thus, a discriminant analysis was calculated to investigate the research questions that it was possible to use a variety of variables related to learning strategies to discriminate between genders. Based on the low percentage of variance explained by the function discriminating between groups and on the low percentage of accuracy of the prediction into the groups by the discriminant function, it was determined that it is not possible to use learning strategies to discriminate between groups categorized by gender.

**Ethnicity**

In order to determine if learning strategy preferences differed between the ethnic groups of learners on the Fort Peck Reservation, the respondents divided into Native American and Caucasian groupings. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

The pooled within-groups correlations are the correlations for the variables with the respondents placed in their groups of ethnicity. The examination of the 105
coefficients of the pooled within-groups correlations in this analysis showed that all were at a sufficiently weak level to remain in the analysis. Only 5 coefficients were at the .3 level; and the remaining 100 were all below .3 level. Thus, the variables in this discriminant analysis were not related to each other, and consequently were not sharing a common variance.

Stepwise selection was used to determine which variables added most to the difference in the groups which were formed by ethnicity groupings. As a result of this Wilk's lambda stepwise procedure, five variables were included in the discriminate function. The following discriminating variables and their corresponding Wilk's lambda values were selected: Use of Human Resources -- .98; Confidence -- .96; Identification -- .94; Planning -- .93; and Test Assumption -- .92. The other 10 variables in the analysis did not account for enough variances to be included in the discriminant function.

The standardized coefficients explain the contribution each discriminating variable makes to the discriminant function. The standardized coefficients for this function which discriminated between ethnic groups were as follows: Use of Human Resources (.64); Confidence (.61); Identification (.46); Planning (.40); and Test Assumption (-.30).

The discriminant function which was used to classify
the cases into these groups was as follows:

\[ D = 0.25 \text{ (Planning)} + 0.39 \text{ (Confidence)} - 0.19 \text{ (Test Assumptions)} + 0.31 \text{ (Identification)} + 0.38 \text{ (Use of Human Resources)} - 9.54. \]

The group centroid for the Native American group was 0.108, and it was -0.759 for the Caucasian group. The canonical correlation was 0.28 for this study. When this is squared, it indicates that the groups explain 0.08% of the variation in the discriminant function.

The percentage of cases correctly classified was 66.10%. The classification correctly place 155 (65.8%) in the Native American group and 22 (31.8)% in the Caucasian group. Thus, the discriminant function is an 16.1% improvement over chance in predicting ethnicity. Consequently, the ethnic groupings could not be distinguished based on their learning strategy scores.

Four variables in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were as follows: Use of Human Resources (.51), Test Assumption (-.43), Confidence (.43), and Identification of Resources (.35). Because of the low percentage of variance explained by the discriminant function and the lack of accuracy in classification, the discriminant function was not named.

Thus, a discriminant analysis was calculated to investigate the research question that it was possible to use a variety of variables related to learning strategies to
discriminate between ethnicity. Based on the low percentage of variance explained by the discriminant function between groups and the low percentage of accuracy of prediction into the groups by the discriminant function, it was determined that it is impossible to use learning strategies to discriminate between groups categorized by ethnicity.

Tribe

In order to determine if learning strategy preferences differed between the two main tribal affiliations of learners on the Fort Peck Reservation, the respondents grouped as Sioux, Assiniboine, and other. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

As in the previous analysis, the pooled within-groups matrix was examined. The examination of the 105 coefficient in this analysis showed that all were at a sufficiently weak level to remain in the analysis. No coefficients were above the .2 level; 7 were at the .2 level; and the remaining 98 were all below the .2 level. Thus, the variables in this discriminant analysis were not related to each other and consequently were not sharing a common variances.

Stepwise selection was used to determine which variables added most to the difference in the groups which were formed by tribal affiliation. As a result of this Wilk's lambda stepwise procedure, six variables were
included in the discriminant function. The following
discriminating variables and this corresponding Wilk's
lambda values were selected: Memory Application--.96;
Reward/Enjoyment--.92; Generate Alternatives--.90; Use of
External Aids--.88; Confidence--.87; and Attention--.85.
The other nine variables in the analysis did not account for
enough variance to be included in the discriminant function.

The standardized coefficients explain the contribution
each discriminating variable makes to the discriminant
function. Since there were three groups, two discriminant
analysis were produced. The standardized coefficients for
Function 1 were Reward/Enjoyment (.22); Memory Application
(.64); Use of Human Resources (.39); Generate Alternatives
(.34); Attention (.26); Use of External Aids (-.20); and
Confidence (.02). The standardized coefficients for
Function 2 were Use of Human Resources (-.03) and Confidence
(-.56).

The discriminant function which was used to classify
the cases into these groups was as follows:

Function 1: \[ D = .15 \text{ (Attention)} + .40 \text{ (Reward/Enjoyment)} + .02 \text{ (Confidence)} - .11 \text{ (Use of External Aids)} + .38 \text{ (Memory Application)} + .21 \text{ (Generate Alternatives)} + \text{ (Use of Human Resources)} - 9.44. \]

Function 2: \[ D = .28 \text{ (Attention)} + .15 \text{ (Reward/Enjoyment)} + .36 \text{ (Confidence)} + .30 \text{ (Use of External Aids)} + .18 \text{ (Memory Application)} - .25 \text{ (Generate Alternatives)} - .02 + \text{ (Use of Human Resources)} - 7.75. \]

The group centroid for Function 1 was .163 for the Sioux,
.699 for the Assiniboine, and .109 for the others. The
group centroid for Function 2 was .122 for the Sioux, .031
for the Assiniboine, and .719 for the others. The canonical
correlation for Function 1 was .32 for this study. When
this is squared, it indicates that the group explain only 1%
of the variation in the discriminant function. The
canonical correlation for Function 2 was .25 for this study.
When this is squared, it indicates that the group explain
only 6% of the variation in the discriminant function.

The percentage of cases correctly classified was
51.25%. The classification correctly placed 111 (48.6%) in
the Sioux group, 29 in the Assiniboine group, 20 in the
other group, and 19 in ungrouped cases. Thus, the
discriminant function is a 1.25% improvement over chance in
predicting group placement. Consequently, it demonstrates
that tribal affiliation cannot be distinguished on the basis
of learners' preference for learning strategies.

Three variables for Function 1 in the structure matrix
had sufficient coefficients to be included in the
interpretation of the meaning of the discriminant function.
They were as follows: Memory Application (.58),
Reward/Enjoyment (.49), and Use of External Aids (-.47).
Five variables for Function 2 in the structure matrix had
sufficient coefficients to be included in the interpretation
of the meaning of the discriminant function. They were as
follows: Generate Alternatives (-.56, Confidence (.55),
Attention (.36), Use of External Aids (.35), and Reward/Enjoyment (.32). Because of the low percentage of variance explained by the discriminant function and because of its lack of accuracy in correctly classifying people into groups, this discriminant function was not named.

Thus, a discriminant analysis was calculated to investigate if it was possible to use a variety of variables related to learning strategies to discriminate between tribal affiliations. Based on the low percentage of variance explained by the discriminant function between groups and the low percentage of accuracy of predictions into the groups by the discriminant function, it was determined that it is not possible to use learning strategies to discriminate between groups categorized by tribal affiliation.

Age

In order to determine if learning strategy preferences differed due to the age of learners on the Fort Peck Reservation, the respondents divided into the four age groupings of 25 years old and under, 26 to 34 years old, 35 to 43 years old, and 44 and over. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

As in the previous analysis, the pooled within-groups matrix was examined. The examination of the 105 coefficients in the polled within-groups correlations in
this analysis showed that all were at a sufficiently weak level to remain in the analysis. Only six coefficients were at the .3 level; and the remaining 99 were all below the .3 level. Thus, the variables in the discriminant analysis were not related to each other and consequently were not sharing a common variance.

Stepwise selection was used to determine which variables added most to the difference in the groups which were formed by age groupings. As a result of this Wilk's lambda stepwise procedure, six variables were included in the discriminant function. The following discriminating variables and their corresponding Wilk's lambda values were selected: Critical Use of Resources—.94; Conditional Acceptance—.89; Planning—.86; Use of External Aids—.84; Identification—.82; and Monitoring—.80. The other nine variable in the analysis did not account for enough variance to be included in the discriminant function.

The standardized coefficients explain the contribution each discriminating variable makes to the discriminant function. The standardized coefficients for this Function 1 were Critical Use of Resources (-.87); Planning (.61); Use of External Aids (.33); Monitoring (.22); Conditional Acceptance (-.10); and Identification of Resources (.09). The standardized coefficients for Function 2 were Conditional Acceptance (.85); Identification of Resources (.58); Monitoring (.45); Use of External Aids (.29);
Planning (.76); and Critical Use of Resources (-.05). The standardized coefficients for Function 3 were Use of External Aids (.70); Critical Use of Resources (-.46); Identification of Resources (-.33); Conditional Acceptance (-.26); Planning (.23); and Monitoring (.15).

The discriminant function which was used to classify the cases into these groups was as follow:

Function 1: \[ D = .38 \text{(Planning)} + .13 \text{(Monitoring)} + .18 \text{(Use of External Aids)} - .06 \text{(Conditional Acceptance)} + .06 \text{(Identification of Resources)} + .55 \text{(Critical Use of Resources)} - 11.16. \]

Function 2: \[ D = .16 \text{(Planning)} + .27 \text{(Monitoring)} + .16 \text{(Use of External Aids)} + .48 \text{(Conditional Acceptance)} + .39 \text{(Identification of Resources)} - .04 \text{(Critical Use of Resources)} - 11.50. \]

Function 3: \[ D = .14 \text{(Planning)} + .08 \text{(Monitoring)} + .40 \text{(Use of External Aids)} - .15 \text{(Conditional Acceptance)} - .22 \text{(Identification of Resources)} - .29 \text{(Critical Use of Resources)} -.002. \]

The group centroids for Function 1 were -.191 for the 25 years old and under group, -.473 for the 26 to 34 year old group; .401 for the 35 to 43 year old group, and .217 for the group over 43. The group centroids for Function 2 were .471 for the 25 years old and under group, -.303 for the 26 to 34 year old group; -.012 for the 35 to 43 year old group, and -.180 for the group over 43. The group centroids for Function 3 were -.034 for the 25 years old and under group, .073 for the 26 to 34 year old group; .171 for the 35 to 43 year old group, and -.218 for the group over 43. The canonical correlation for Function 1 was .33 for this study. When this is squared, it indicates that the groups explain
only 11% of the variation in the discriminant function. The canonical correlation for Function 2 was .28 for this study. When this is squared, it indicates that the groups explain only 8% of the variation in the discriminant function. The canonical correlation for Function 3 was .15 for this study. When this is squared, it indicates that the groups explain only 2% of the variations in the discriminate function.

The percentages of cases correctly classified was 37.06%. The classification correctly placed 20 (46.4%) in group 1; 16 (40%) in group 2; 16 (35.6%) in group 3; 11 (26.2%) in group 4. Since there are four groups and a 25% rate of chance placement, the discriminant function is a 12.06% improvement over chance in predicting group placement. Since the criterion for acceptance of this function as useful was 62.5% correct classification, it demonstrates that age cannot be distinguished on the basis of learners' preference for learning strategies.

The variables for Functions 1 in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminate function. They were as follows: Critical Use of Resources (.72) and Planning (.42). Two variables for Function 2 in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminate function. They were Conditional Acceptance (.65) and Identification (.44). Five variables for Function 3 in the
structure matrix and sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were as follows: Critical Use of Resources (-.52), Conditional Acceptance (-.30), Identification of Resources (-.31), Use of External Aids (.68), and Monitoring (.31). Because of the low percentage of variance explained by the discriminant function, and the lack of accuracy in Classification, the discriminant function was not named.

Thus, a discriminant analysis was calculated to investigate the research question that it was possible to use a variety of variables related to learning strategies to discriminate between ages. Based on the low percentage of variance explained by the discriminant function between groups, and the low percentage of accuracy of prediction into the groups by the discriminant function, it was determined that it is not possible to use learning strategies to discriminate between groups categorized by age.

Traditionalism

In order to determine if learning strategy preferences differed between the degree of traditionalism of learners on the Fort Peck Reservation, the respondents were divided into two groups according to their scores on the 10-point self-assessment of their own perceptions of their degree of traditionalism. Since very few rated themselves below 4 on
the scale, the two groups were a moderate group who rated themselves with a 5 or 6 on the scale and a traditional group who rated themselves with an 8, 9, or 10. The set of discriminating variables used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

As in the previous analysis, the pooled within-groups matrix was examined. The examination of the 105 coefficients in this analysis showed that all were at a sufficiently weak level to remain in the analysis. Only 1 coefficients was at the .3 level; 13 were at the .2 level; and the remaining 91 were all below the .2 level. Thus, the variables in the discriminant analysis were not related to each other and consequently were not sharing a common variance.

Stepwise selection was used to determine which variables added most to the discrimination between tradition. As a result of Wilk's lambda stepwise procedure, two variables were included in the discriminant function. These discriminating variables and their corresponding Wilk's lambda values were Organization--.95 and Planning--.92. The other 13 variables in the analysis did not account for enough variance to be included in the discriminant function.

The standardized coefficients explain the contribution each discriminating variable makes to the discriminant
function. The standardized coefficients for this function which discriminated between tradition were Planning (-.58) and Organization (.77).

The discriminant function which was used to classify the cases into these groups was as follows:

\[ D = .37 \text{ (Planning)} + .46 \text{ (Organization)} -.25. \]

The group centroid for moderately traditional group was .291, and it was -.279 for the traditional group. The canonical correlation was .28 for this study. When this is squared, it indicates that the groups explain only 8% of the variation in the discriminant function.

The percentage of cases correctly classified was 60.74%. The classification correctly placed 66 (60.6%) in the moderately traditional group and 69 (39.1%) in the traditional group. Thus, the discriminant function is as 10.74% improvement over chance in predicting group placement. Consequently, it demonstrates that tradition cannot be distinguished on the basis of learners' preference for learning strategies.

Three variables in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were as follows: Organization (.83), Planning (-.64), and Attention (-.34. Because of the low percentage of variance explained by the discriminant function and the lack of accuracy in classification, the discriminant function was not named.
Thus, a discriminant analysis was calculated to investigate the research question that it was possible to use a variety of variables related to learning strategies to discriminate between the degree of traditionalism. Based on the low percentage of variance explained by the discriminant function between groups and the low percentage of accuracy of prediction into the groups by the discriminant function, it was determined that it is not possible to use learning strategies to discriminate between groups categorized by degree of traditionalism.

**College and Employee Grouping**

In order to determine if learning strategy preferences differed between the present occupation of the learners on the Fort Peck Reservation, the respondents were divided into two groups. One group contained the tribal college students, and the other was made up of the employees from the community agencies. The set of discriminating variable used to predict placement in these groups consisted of the 15 learning strategies found in SKILLS.

As in the previous analysis, the pooled within-groups matrix was examined. The examination of the 105 coefficients in this analysis showed that all were at a sufficiently weak level to remain in the analysis. Only 1 coefficient was at the .3 level; 11 were at .2 level, and the remaining 93 were all below the .2 level.

Stepwise selection was used to determine which
variables added most to the difference in the groups which were formed by the tribal college and community employee groupings. As a result of this Wilk's lambda stepwise procedure, five variables were included in the discriminant function. The following discriminating variables and their corresponding Wilk's lambda values were selected: Critical Use of Resources---.97; Conditional Acceptance---.96; Identification of Resources---.95; Use of External Aids---.94; and Reward/Enjoyment---.93. The other 10 variables in the analysis did not account for enough variance to included in the discriminant function.

The standardized coefficients explain the contribution each discriminating variable makes to the discriminant function. The standardized coefficients for this function which discriminated between group defined by employment status were as follow: Conditional Acceptance (.58); Critical Use of Resources (-.49); Identification of Resources (.46); Use of External Aids (.42); and Reward/Enjoyment (.39).

The discriminant function which was used to classify the cases into groups was as follows:

\[ D = .23 \text{(Reward/Enjoyment)} + .24 \text{(Use of External Aids)} + .34 \text{(Conditional Acceptance)} + .31 \text{(Identification of Resources)} - .31 \text{(Critical Use of Resources)} - 6.17. \]

The group centroid for the tribal college students was .268, and it was -.265 for the employee group. The canonical correlation was .26 for this function. When this is
squared, it indicates that the groups explain only 6% of the variance in the discriminant function.

The percentage of cases correctly classified was 63.69%. The classification correctly placed 89 (60.7%) in the college group and 90 (33.3%) in the employee group. Thus the discriminant function was a 13.69% improvement over chance in predicting group placement. Consequently, it demonstrates that group defined by group cannot be distinguished on the basis of learners' preference for learning strategies.

Four variables in the structure matrix had sufficient coefficients to be included in the interpretation of the meaning of the discriminant function. They were as follows: Critical Use of Resources (-.61), Conditional Acceptance (.49), Identification of Resources (.35), and Use of External Aids (.34). Because of the low percentage of variance explained by the discriminant function, and the lack of accuracy in classification, the discriminant function was not named.

Thus, a discriminant analysis was calculated to investigate the research question that it was possible to use a variety of variables related to learning strategies to discriminate group defined by group. Based on the low percentage of variance explained by the discriminant function between groups and the low percentage of accuracy of prediction into the groups by the discriminant function,
it was determined that it is not possible to use learning strategies to determine between the groups of tribal college students and community agency employees.
CHAPTER 5

IDENTIFYING GROUPS OF LEARNERS

Cluster Analysis

Following the quantitative analysis of the data from the 179 participants, analyses were conducted to determine if groups of learners could be identified based on SKILLS learning strategies. This process involved the use of cluster analysis, one-way analysis of variance, and interviewing to describe the clusters. Cluster analysis is a "useful statistical procedure to discover structure in data that is not readily apparent by visual inspection or by appeal to other authority" (Aldenderfer & Blashfield, 1984, p. 16). While the discriminant analysis process involved a deductive approach to the data, the cluster analysis was an inductive approach. In this way, "researchers function more in a sociological mode. The issue being, how to tease sense out of the data. Rather than imposing sense upon the data, the goal is to have meaning and understanding emanate from the data itself" (Conti, 1996, p. 67).

"The choice of variables to be used with cluster analysis is one of the most critical steps in the research process" (Aldenderfer & Blashfield, 1984, p. 19). "Needless to say, the quality of the analysis is dependent upon
including significant variables that may inherently have an influence upon the natural groupings which are being sought to be uncovered" (Conti, 1996, p. 69). Therefore, like the other studies investigating learning strategies using SKILLS of which this study is a part, the 15 learning strategies of SKILLS were used for the cluster formation (Hill, 1992; Kolody, 1997; Korinek, 1997; Lockwood, 1997).

There are several methods in determining how cases will be combined into clusters. In the social sciences the Ward's method has been widely used because "this method is designed to optimize the minimum variance within clusters....The method tends to find (or create) clusters of relatively equal size" (Aldenderfer & Blashfield, 1984, p. 43). In using cluster analysis, "the task of the researcher is to determine the optimal number of clusters that are the best solution for the data" (Conti, 1996, p. 69). Using the standard cluster analysis procedure of SPSS with the Ward's method, the four-cluster solution was determined to be the most appropriate method for describing the learners on the Fort Peck Reservation.

"While cluster analysis is a powerful method for identifying groups, additional information is needed to better gain insight into the true meaning of the clusters and to name and describe them" (Conti, 1996, p. 70). To accomplish this, analysis of variance was used "for determining which variables are related to each cluster and
for determining how the variables are associated with each cluster" (p. 70). In addition to this numeric data, "supplementary data is needed. This data can be secured through individual interviews or focus groups with representative learners from the various clusters" (p. 71). Using these triangulation procedures to better interpret the cluster composition (p. 70), the four cluster of learners were named Adjusters, Critical Thinkers, Resource Managers, and Engagers (see Table 5).

### Table 5. Cluster Frequency Distribution

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusters</td>
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<tr>
<td>Critical Thinkers</td>
<td>62</td>
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</tr>
<tr>
<td>Resource Managers</td>
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<td>23.5</td>
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<tr>
<td>Engagers</td>
<td>27</td>
<td>15.1</td>
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</table>

#### ANOVA of the Clusters

Analysis of variance (ANOVA) is a statistical technique which is used to compare two or more groups in terms of their mean scores (Huck, Cormier, & Bounds, 1974, p. 58). ANOVA was used to compare the means of each of the four clusters on each of the 15 learning strategies to determine if the clusters differed significantly in the usage of the learning strategies. For those analyses in which significant differences were found at the .05 criterion level, post hoc comparisons using Tukey's HSP procedure were conducted "to help the researcher find out exactly where the
significant differences lie after a significant F ratio has been obtained" (p. 68).

Means for each of the 15 learning strategies in SKILLS were calculated for each of the four cluster groups. A one-way analysis of variance was conducted on each of the 15 variables to determine if there was significant differences among the four cluster groups (Hays, 1995; Kolody, 1997; Korinek, 1997; Lockwood, 1997; Strakal, 1995; Yabui, 1993). Significant differences existed for all of the 15 learning strategies (see Table 6). Therefore, all 15 variables were retained in the analysis to assist in naming and describing the clusters.

Although they were not used in the cluster formation, the seven demographic variables were used to help identify the important characteristics of each group. The seven variables were grade point average, gender, ethnicity, tribal affiliation, age, degree of traditionalism, and grouping as either a tribal college student or a community employee. No significant differences were found among the clusters on any variables except for age (see Table 7).

The means of the 15 learning strategies along with the demographic variable of age for each cluster were used to help identify the major characteristics of each group. One-way analysis of variance with Tukey post hoc tests were also used to identify the groupings for each of the significant variables. The means for the 15 learning strategies and
Table 6. ANOVA of Learning Strategies in Clusters

<table>
<thead>
<tr>
<th>Strategy</th>
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Table 7. ANOVA of Demographic Variables Among Clusters

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</table>

The multivariate technique of cluster analysis produced four distinct clusters of learners. Information for describing these clusters was secured through analysis of variance procedures and through individual and group interviews. Thus, these procedures, which investigated the research question related to clusters of learners existing on the Fort Peck Reservation, demonstrated that it was possible to identify distinct clusters of learners on the reservation by using the 15 learning strategies of SKILLS.
Table 8. Means of Cluster Groupings on Learning Strategies and Demographic Variables

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</table>

Interview Data

Interviews were used to name and describe the four clusters. These interviews were conducted in both individual and group settings for members from each of the four clusters. Strakal (1995) has recommended "insights from the quantitative data analysis can be used as a guide for planning the protocol for the interviewing sessions" (p. 189). Therefore, the data from the analysis of variance...
procedure were used to identify distinct characteristics for each group, and interview questions were targeted to explore these distinct characteristics. Through this combination of the qualitative and the quantitative procedure, the clusters were named and described.

Through several studies using SKILLS (Conti & Fellenz, 1989; Conti & Kolody, 1995; Hays, 1995; Kolody, 1997; Kolody & Conti, 1996; Korinek, 1997; Lockwood, 1997; Strakal, 1995; Yabui, 1993), a design has evolved for gathering data for the purpose of describing the groups identified by learning strategies. In these studies, "a triangular process has been developed for interpreting cluster compositions. This process involves using existing quantitative data and gathering additional qualitative data" (Conti, 1996, p. 70) through interviews and focus groups.

Individual and group interviews were conducted with members from each cluster to add clarification to the differences between groups. These interviews included respondents from both the tribal college and the community employees groups. Because of difficulties in scheduling, most of the groups for the interviews were small with either three or four participants. Twenty-two students and employees participated in the interviewing process (see Table 9).

By using quantitative and qualitative means, four groups of learners at the Fort Peck Reservation were
identified and described. Together, these two techniques allowed for the research questions which asked about the possible existence and description of these groups to be answered. The identification and description of these four groups of learners are the results of the cluster analysis, the analysis of variance conducted with each variable when the participants were grouped by the four clusters, and information provided by the learners from each cluster during the individual and group interviews.

**Adjusters**

Adjusters are flexible learners who can question their learning situation and make adjustments to satisfactorily complete a learning task. Adjusters rely on Adjusting, Testing Assumptions, and Confidence. The youngest learners were in this group.

One of the learning strategies in the Metacognitive area is Adjusting. This strategy involves directing and improving one's learning during the learning process. The adjusting of the learning plan is done in response to the
evaluation of the learning. "Effective learning calls for such modification or change in order to fine-tune or occasionally revise learning situations" (Counter & Fellenz, 1993, p. 10). Tactics that can be used to adjust the learning include revising the learning plan, restructuring the goals of the learning process, or personalizing the learning plan (p. 10). One Adjuster pointed out that:

I'll stick with the same routine unless I can find away to make it easier, shorter, or cheaper. I feel it would be a waste of time because I already know how to do something, so why should I learn another way, when I can learn something else, when I can learn more things. I already know how to do that.

Supporting Metacognitive Adjusting for Adjusters is the Critical Thinking learning strategy of Testing Assumptions. "The process of challenging assumptions presumes the ability to identify these assumptions and the willingness to examine them" (Fellenz, 1993, p. 31). Trying to identify the assumptions that underlie ideas and actions is central to critical thinking (Brookfield, 1987, p. 7). However, this process may be threatening and disturbing because of the disruptive change that may be necessary if the assumptions are found wanting (p. 90). Actions for testing assumptions related to the learning plan involve clarifying goals, recognizing inconsistencies, and questioning things that are normally taken for granted (Fellenz, 1993, p. 32). In this process, learners "search for new assumptions that fit more closely their experiences of the world" (Brookfield, 1987,
One Adjuster described this process in the following way:

I have to go away, be by myself, isolated, no sound, nothing around me, and just concentrate on it. If it's a problem, if its numerical or equations, I repeat it and go over it until I understand it. I have to understand where its coming from, where its going, and different relationships it has. If its mainly numbers or any kind of, if you're learning at a certain level, I have to understand where it comes from. I have to go all the way back down, then I know from there if I can advance and where I can go.

Another Adjuster demonstrated how Testing Assumptions can be associated with the practice aspect of relating the learning to one's own experiences:

I was thinking about this Algebra class I took a few years back. They talked about the theories—addition, subtraction, and divisions. Here I told the teacher that I don't even care about these theories and all of that, just show me, explain to me how you get this answer or how you do the problem solving for the math problem. I don't care how you do it; just show me how you get the answer.

These groups of learners also rely on Confidence. Confidence is believing that one can complete the learning task successfully. Confidence is a key motivational element (Fellenz, 1993, p. 16), and "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). In Metamotivation learning strategies, "the affective domain is the dominant factor in learning" (Kolody, 1997, p. 116). Therefore, the learner's perceptions of their abilities and
of the importance of the learning to them is a major factor influencing their learning. A 40-year old secretary commented that:

My experience was getting into Montana School of Mines. They didn't think I could do it. They put me on academic probation the first semester because they didn't think I had the background because you had to have a certain background to get in. I went before the admissions board and said that I know I can do it. So they put me on academic probation, and I came out with a 3.8.

Adjusters scored low on several learning strategies. These were Planning, Memory Organization, Using External Aids, and Critical Use of Resources. However, in their comments they indicated that they still use some of these strategies. For example, one Adjuster used external aids in combination with Metamotivation concepts of getting satisfaction from the learning activity:

I have to make a check list everyday. I do. I mean even though I'm young, I forget a lot of things. I sit at home the evening before. I think of the things I have to do the next day and write it down. I have to because if something doesn't get done before I go home, I feel like I wasted the whole day.

Likewise, two other Adjusters combined Planning with the feeling of having confidence and control over their activities.

I think another way is to keep organized. I have to do my filing everyday. When I'm doing something, if we're doing projects, if I have three or four projects, then I have to keep them orderly.

Studying for mid-term test. I guess it depends on how interested I am. There are a lot of details that you have to remember. What I do is a week
before the test I go over everything that's going to be on the covered on the test. About two days before the test, I'll have someone quiz me on everything, go over and over so I'll remember it.

**Critical Thinkers**

Critical Thinkers rely on a reflective thinking process which utilizes higher order thinking skills (Brookfield, 1987). Critical Thinkers evaluate the specifics and the generalizability within a situation. They generate alternatives to create new ways of learning. They are also open to conditional acceptance of learning outcomes while still being considerate of other possible learning solutions. Critical Thinkers reinforced these strategies with the Metacognition learning strategy of Adjusting which involves modifying the learning plan as a result of gathering evaluative data. A program planner made this statement:

You have to look at strategic planning in the sense of to be able to brainstorm. You see by putting everything and anything down, you learn from that. To be able to take information down from that, from that brainstorming, you put down positive approaches or goals and objectives that you can build upon.

A 45-year old woman said that:

I'm in the middle school now. These kids always quote "Wanna be's" all the time. You never know what they're going to come up with. The next day it's always different, so you sit and watch one day. The next day their different. Changing habits all the time. I have to recognize this and be aware of this constantly.... That's what I was going to say, learning things from one day, you can learn from them, this is how you're going to
do something else. You sit and watch and observe. You got to learn. I mean not learn but something else. You got to do with these kids. What else can you do? So, everyday is changing your learning. So to me its a new learning experience.

A beautification officer employed with Fort Peck tribes said,

I knew the overall effect of what was going to happen. Eventually, I foreseen and still foresee that this program is going to expand more. I kind of knew where I was going to be at. Going back five years and looking ahead to now, I knew I was going to be having difficulties all the time.

One individual from another group indicated

I just remember, I see an example or a problem. I sit there and look at it. Think of the colors, the way its made, and keep it in my mind. I watch everything. I think that's part of my learning--watching and listening all the time. I keep things in my mind; someday I might need it.

Just like every year we plan on going on this trip to Ft. Hall. I know its coming up, the date and everything. I plan for it, have these guys lined up. Now about three weeks away, I had about twenty players on the list to go, but now we're down to four players. Now I got to find players. To me you know, I think these guys are going to go, but at the last minute they change their minds, and this restructures your routine.

Critical Thinkers also rely on the Use of External Aids. This involves the use of such things as lists or appointment books to aid in the memory process. Two respondents gave their examples,

I think one thing I changed is to listen to those kids. They need something, someone to talk to. I jot down a few things for the next day. If this child acts up again, I go back to look to see what they did the day before.

By learning like me, it's easier for me if someone shows me how to do something, especially on a pay
day. You have all these things to do. You know I have to write it all down, so I won't forget anything. Otherwise I'll do two things and I'll forget.

Critical thinkers have the tendency to put things off or have difficulty in making decisions. Their strengths lie in generating alternatives and in conditionally accepting things. Consequently, they avoid the concrete action of planning and conducting an activity within a specific period of time.

You kind of put it aside. If you have to do it, then you don't want to do it. I want to do this. Then maybe you force yourself to do it. Otherwise if I say I have to do this, I'll put it off until the last minute. So it's like I can do it, but it has to wait until I'm ready.

There are several learning strategies which the Critical Thinkers do rely upon. These are Planning, Testing Assumptions, and all of the Metamotivation learning strategies of Attention, Reward/Enjoyment, and Confidence.

Resource Managers

Resource Managers are highly competent and skilled learners. They know how to locate and use the best sources of information. They critically evaluate the resources and use the most appropriate resources rather than merely the most readily available resources. This older group of learners are actively involved in a meaningful manner with the learning task. For example,

I work in rehabilitation, and the resources are very limited. We have to reach out to other
hospitals, other professionals. We reach out to the University of Arizona. In addition, because of our own limited expertise locally, we have to reach out for research and reading medical advancements. We learn right along with the recipients, increasing our own knowledge.

These types of learners also use appropriate rather than available sources. "The concern here regards both the learner's awareness of appropriate resources and willingness to use such sources" (Fellenz, 1993, p. 36). While doing so, they recognize their limitations.

I'm a by-myself person. In a grant situation I have some expertise in grants. I make a list of what I need to know. Then if I run into problems, then I ask someone who knows.

Resource Managers use Human Resources more than any other group. This includes dialogues, discussions, and networking. They seek experts and professionals to integrate others into the social processes of learning, or they check with an outsider. Several people responded by saying,

One of the first things I would do is to go to someone who has faced that problem and ask them how they dealt with it. If it worked, ask them, "Well, what did you do?" I would seek advice.

Depends on what you're learning. What you're dealing with, like in my case with mail order things. If you lost the directions, if you had to call the company or something, but if it was a local thing or if you had local resources, then you would go to local resources or ask someone if they had similar experience.

I was working on a grant, I know this grant writer, so I talked to him, to help me write this grant. Also, if you don't know what to do, there is always somebody around grants who will know, and the main thing I could see is willingness to
share your expertise with other people.

There are several learning strategies which Resource Managers prefer not to use. These are Adjusting, Reward/Enjoyment, Confidence, Use of External Aids, Generating Alternatives, and Conditional Acceptance.

Engagers

The Engagers are an older group of learners who have perception or and knowledge of their learning progress. They score high in all of the Metamotivational learning strategies of Attention, Reward/Enjoyment, and Confidence. Like the Engagers in Kolody's (1997) study, they need to see the value in the learning before they can become committed to the learning; for them, learning must have a purpose with which they can emotionally identify. They make judgements on whether to get involved in the learning project. They are not afraid to show their feelings.

I was looking at this example of our own learning styles--[related to] skim or review. I guess that's what I do a lot. I skim to determine the purpose of it. When I filled out this questionnaire, that is one of the first things I did, I just skimmed through it without sitting down to read it. I get impatient. I just like to get it done. Read it or study it. Skim through it. Just get it done.

These types of learners also assess how they are proceeding through a learning task by utilizing the Metacognition learning strategy of Monitoring. "Monitoring becomes an important part of metacognition as one goes
through the learning process. During the process of learning, various things can happen to interfere with attention and understanding" (Counter & Fellenz, 1993, p. 9). When this group was asked how they assess their learning, they replied,

I'll read through it first. Then I'll think about it. What it is and why I have to know it. Then from that I'll decide what I need to know and how I need to learn it.

Learning is a process of all different areas a person works in. It's never really complete; it's an on going process. If you identify the needs and things, then you know there are ways to improve upon on what you are doing.

You ever get to the point where you feel that you done so much that you can't do any more. How do you work around that because I mean I get frustrated. You do so much for them. It seems they want more and more. I think we can only be responsible for doing the best we can, and it's up to the individual or to the individual to contribute also. You know, just like rasing kids. We're going to make mistakes, but the end result is up to them. You know we hope we give them good logic foundation, but we can only be responsible for so much.

Engagers also use the Memory learning strategies of Organization and Use of External Aids. Memory Organization involves the structuring or processing of information so that it can be better stored and retained in the mind and retrieved from memory. Techniques such as chunking allows the material to be organized into sets of information, and this thereby reduces the overall categories of material that have to be remembered (Paul & Fellenz, 1993, p. 23). When groups of learners were asked how they remembered things
they answered in this way.

Review the material, go through it quickly once, and then try to figure out what it is you need to know. Then go back and concentrate on it. Sometimes you can solve things just by logic if you understand.

Show me only once to do something, and I go from there. Where I work, computers, they have all this inventory. They showed me how to do this inventory. They showed me how to do this one item, and I ended up doing the whole isle. Shortcuts, I put a lap top computer on a cart, and I went down the isles. I went up and down three isles instead of grabbing items off the shelf and running back to the business office and doing it one at a time.

"Memory strategies can be categorized as either external or internal aids. External memory techniques rely on the interaction of the individual and the manipulation of the environment to insure recall. Examples include appointment books, making a list of things to do, or asking another to remind you of something" (Counter & Fellenz, 1993, p. 23).

When you order from a catalog or something, make sure all the directions are read before you even start to work on it. It will tell you stuff, step by step on how to assemble the product. I know a lot of people just throw directions away and [then] wished they have had them instead of relying on past experiences.

There are several learning strategies which Engagers prefer not to use. These are Adjusting, Application, Conditional Acceptance, Use of Resources, and Use of Human Resources.
CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study

Intervention by the mainstream culture has upset Native people's traditional ways of learning. Federal educational policies and practices have resulted in Native Americans being the least represented group in higher education. However, through the self-determination movement, Indian people are seeking to regain control of their learning. To do this, a need exists to know more about how various groups of Indian people learn. Learning strategies offer one way of finding this source of information.

A major institution for Native American's regaining this control of their education is the tribal college. "Tribal colleges are truly community institutions" (Boyer, 1989, p. xii). Because of the high dropout rate among Native American college students, tribal governments and Native American educational support groups have come to realize the need for tribal colleges. Tribal colleges have been effective because of their mission to preserve individual tribal cultures and offer an effective educational program to better serve their people and communities. Learning strategies are a way to determine how
Native American college students learn in real-life learning situations. These learning strategies indicate what influences Native American student learning and what approach to learning they prefer. One goal of tribal colleges is to increase student learning and productivity. To enhance tribal college education their learning skills must be better understood to meet these goals.

This study described the learners served by the tribal college on the Fort Peck Reservation. To do this, both students from the college and employees from community agencies were included. The purpose of this study was to (a) identify learning strategies of adults on the Fort Peck Reservation at different agencies in the community, (b) examine Fort Peck Community College students to determine if it is possible to discriminate between the highest and lowest achievers, and (c) identify and describe distinct groups of learners on the Fort Peck Reservation.

The Self-Knowledge Inventory of Lifelong Learning Strategies (SKILLS) was used to measure learning strategies. The scenarios in SKILLS were specifically tailored to fit learning situations on the Fort Peck Reservation. The intent of SKILLS is to measure adult learning process that are essential for assessment in real-life learning. Descriptive statistics were used to describe the learning strategies used by the learners from the tribal college and the community agencies. In addition discriminant analysis
was used to investigate if learning strategies could be used to identify the ways groups differ. For purposes of analysis, the 179 participants were grouped according to success in college measured by grade point average, gender, ethnicity, age, tribal affiliation, degree of traditionalism, and grouping as either a college student or a community agency employee.

Among the seven variables analyzed, differences were found only in the area of grade point average. The participants did not differ in their use of learning strategies when they were grouped by any other demographic variable. However, when the tribal college students were grouped according to those with the highest and those with the lowest grade point averages, they differed in the process of Reactive Networking. Those with low grade point averages engaged in active networking with others much more than those who maintained a high grade point average.

Cluster analysis was used to identify four distinct groups of learners on the Fort Peck Reservation. One-way analysis of variance and individual and group interviewing of the respondents provided additional data for describing these clusters. Based upon this quantitative and qualitative data, the four clusters of learners were named Adjusters, Critical Thinkers, Resource Managers, and Engagers.
Conclusions

Reactive Networking

The learning strategy process that distinguishes high achievers from low achievers at Fort Peck Community College is Reactive Networking.

One of the major questions of this study related to whether it was possible to use learning strategies to distinguish between the highest and lowest achievers at Fort Peck Community College. The discriminant analysis which grouped students according to the grade point average revealed that these groups differed in the amount that they practiced the concept of Reactive Networking. Reactive Networking is the process which combines the use of the learning strategies of Use of Human Resources and Planning. These learning strategies are combined in this concept in such a way that people who are high on one strategy are low on the other. Therefore, the learners either make extensive use of networking with other people as a learning resource while doing little individual planning of the learning or they engage in much individual planning of their learning activity while relying very little on the use of human resources.

Reactive Networking is taking place within the setting of the tribal college. The mission of the tribal college is to preserve and promote the culture of the local tribes. One characteristic of tribal people is a reliance on the
oral tradition. Tribal knowledge has been preserved and passed on to future generations by this oral tradition which depends on the use of human resources. The most visible element of this in the tribal society is the elder. Elders are the holders of knowledge and are the resource that one goes to in the tribal community to acquire knowledge related to Indian ways. Thus, the transmission of knowledge in the traditional way has depended upon respect for a networking system.

Although the practice of Reactive Networking can be associated with traditional ways of learning in a tribal community, this process is not successful for students at the tribal college. Those who engage in Reactive Networking have the lowest grade point average. Those who do not practice Reactive Networking rely heavily on the mainstream cultural concept of individualistic planning of their learning; they also have the highest grade point average. This raises the question of what is being rewarded in the grading system at Fort Peck Community College. Is the grading system supporting the mission of the college to promote the culture or is it fulfilling the agenda of the school's accrediting agency of preparing learners to fit into mainstream institutions. In 1992, Hill discovered that the most successful students at the tribal colleges were those who Uncritically Accepted the elements in their learning environment. This finding suggested that the
tribal colleges may be focusing more on preparing students to successfully transfer to the mainstream college and university system which supports this type of behavior than they are preparing students to operate in their own culture. This finding related to Reactive Networking posses a similar issue. Should the college be supporting the practice of Reactive Networking because it can be associated with traditional ways of learning, or should they be discouraging it because it is not associated with the current way of assessing academic success at the college?

Distinct Groups of Learners

Distinct groups of learners exist on the Fort Peck Reservation in relationship to their learning strategies.

Cluster analysis was conducted to determine if groups of learners existed within the Fort Peck community. Using the learning strategies in SKILLS, this analysis revealed four groups of learners. Follow-up statistical analysis and data gathering from individual and group interviews provided additional information for describing these groups. These four groups are Adjusters, Critical Thinkers, Resource Managers, and Engagers. The Adjusters learners who tend to question the assumptions associated with the learning and make adjustments as needed; they also assess their own likelihood of succeeding in the learning before getting involved. The Critical Thinkers reflect upon the learning process by generating alternatives for learning and by being
flexible by adjusting their learning and by being willing to conditionally accept learning outcomes; they also rely on the use of external aids. Resource Managers are those learners who know the value of human resources; they not only use resources wisely and critically but also do conscious planning of their learning. The Engagers rely heavily on affective domain strategies in the Metamotivation area as well as doing extensive monitoring and questioning the underlying assumptions associated with their learning; finally, they also use the Memory area strategies of organizing their learning and using external aids.

Educators have long sought ways of identifying and addressing the individual differences that they know exist in learners. Efforts in this direction have led to nearly two decades of field-based research related to learning styles. While learning styles provides some understanding of this concept of individual differences, many questions remain. This has led adult educators in the exploration of learning strategies. Recent research using SKILLS has consistently revealed similar groups of learners. This study is one in a series which is using a similar research design; however, each of these studies is with a different population. Nevertheless, the findings are remarkably similar. These studies are tending to find either four or five distinct groups of learners. The characteristics of these groups are similar even though the groups have been
formed using several populations at different locations. Because of this similarity, the names for the groups in this study were purposively made the same as those in the other studies when the characteristics of the group were similar enough to warrant this. Thus, the groups of Critical Thinkers, Resource Managers, and Engagers are similar to those described by Kolody (1997). In addition, the Adjusters have many things in common with the Monitors in Kolody's study. All groups are similar to those found by Lockwood (1997) and Korinek (1997). Consequently, a growing data base is developing which suggests a basic description for five generic groups of learners.

Demographic Variables

Learning strategies are broadly distributed among various demographic factors.

Various demographic variables were related to learning strategies in both the discriminant analyses and in the clarification of the cluster analysis results. In almost every analysis, the grouping by demographic variables failed to produce any significant results. These findings are similar to other studies using SKILLS (Conti, Kolody, & Schneider, 1997; Kolody, 1997; Korinek, 1997; Lockwood, 1997). Collectively, these studies support the conclusion that "learning strategies are not a useful tool for discriminating among various demographic groupings" (Kolody, 1997, p. 137). This failure to find differences indicates
that the learning strategies are randomly distributed within each of the demographic groupings.

**SKILLS as Research Instrument**

SKILLS is an effective instrument for measuring learning strategies in the Native American community.

In order to be more relevant to respondents, the scenarios for SKILLS should be tailored to fit the real-life situations of the respondents.

SKILLS has been used successfully in numerous research studies investigating learning strategies. Hill (1992) was one of the first to use SKILLS in formal research, and he administered it at the seven tribal colleges in Montana. Although he used the general form of the instrument, researchers since that time have tailored the generic scenarios to fit their specific situation. This approach allows the researcher to reduce the number of scenarios from six to four and removes potential problems arising from administering the instrument and relating to entering the data. Future researcher planning to use SKILLS should listen to the voice of experienced researcher with the instrument (Kolody, 1997; Lockwood, 1997; Strakal, 1995) and tailor the instrument to fit their audience.

**Recommendations**

This study indicates that SKILLS and learning strategies are an appropriate way to view learning for those who make up Fort Peck Community College and the community
which it serves. Therefore, based on the conclusions from the study, the following recommendations are suggested to students, faculty, and administrators. It is important for those who make up the tribal college to be conscious of how learning strategies relate to achievement at Fort Peck Community College.

Faculty

From this study SKILLS showed that it is a useful instrument in determining between high and low achievers. Faculty at Fort Peck Community College can incorporate these findings into a more practical method of teaching strategies and for course planning. SKILLS can be used for the purpose of enabling teaching styles to be more appropriate for the way students learn. From this method faculty should realize the different achievement levels of their students. Some students are high in Use of Human Resources and low in Planning. As a group, Metamotivational learning strategies are not used as much as other strategies. The lowest learning strategy used is Memory Application. Instructors should consider providing students instruction in some of these little used strategies and in introducing other learning strategies into their teaching procedure to meet student needs.

It is important for faculty to determine the abilities and background of their students. In this way, the instructor can determine what information is best for the
learning strategy of the student. Those students who are low achievers may need more instruction in their learning process. The faculty can identify students in need and provide instruction in learning strategies that have the potential to help them improve their learning.

Administrators

From the result of this study at Fort Peck Community College, high achievement was found in the area of Planning and low Use of Human Resources. Low achievement was associated with the opposite application of these learning strategies. Administrators at any tribal college have the authority to determine the educational procedure of their institutions. It should be recognized that in the area of low achievement, learning strategy efforts should be made to increase these areas. There could be classes that provide training in a variety of learning strategies. In addition, faculty could be trained in the identification and application of learning strategies in their specific area of teaching. The administration could also provide staff development session on methods of incorporating these strategies into the classroom.

Students

SKILLS has demonstrated that it is an effective instrument when measuring learning strategies that are related to achievement in the tribal college. Tribal
colleges should use SKILLS to help students assess their learning strategies and inform them of the implications of using these strategies.

The findings show that it is not possible to use learning strategies to discriminate between groups categorized by gender, ethnic, tribe, age, traditionalism, and group status of either a student or agency employee. Through quantitative and qualitative research, four groups of learners were identified and described. The description of the four groups of learners are the result of cluster analysis. These groups were identified as Adjusters, Critical Thinkers, Resource Managers, and Engagers. The four distinct groups of learners according to this study have their own methodology of approaching learning. Since the learners fall into four general groups, the college could help students identify in which group their approach to learning falls. They could then be provided information on how to best learn given that approach to learning. In addition, they could be provided information on the other groups so they could better understand the learning patterns of their colleagues.

Grades

The findings indicate that it was possible to use SKILLS scores to discriminate between Fort Peck Community College grade point average. The process that separates low achievers from high achievers is Reactive Networking. Since
this concept can be related to traditional tribal ways of learning yet is associated with low achievement at the college, the faculty, administration, and community should assess if the college is truly addressing its mission in the way it evaluates learning at the college.

Other Research

SKILLS was an effective instrument to measure learning strategies at Fort Peck Community College. Using SKILLS gave an insightful profile and description of the learners and their desired way to approach learning. To make this study complete, individual and group interviews were conducted. This study has been one part of several studies conducted by the faculty and students in the Adult Education program at Montana State University. These studies use different populations in different locations, however, the methodology is similar in content. These studies have been confirmed by researchers such as: (Conti & Kolody, 1995, 1996; Conti, Kolody, & Schneider, 1997; Korinek, 1997; and Lockwood, 1997).

This line of inquiry should be continued. SKILLS has been an effective instrument to measure learning strategies of tribal colleges and other communities. Researchers when using SKILLS develop their own scenarios that coincide with the population they are working with. "When using SKILLS to measure learning strategies of a population, it is extremely effective to use discriminant and cluster analysis followed
by focus groups of the clusters to better define and describe learning groups" (Kolody, 1997, p. 149).

Summary

This study is an addition to other works that have been complied at the Center for Adult Learning and Research at Montana State University. In addition, this study can assist those who want to continue research for the purposes of learning strategies. Learning strategies are essential for developing better learners at tribal colleges. The use of SKILLS in determining learning strategies allows for alternatives for tribal college students to achieve academic success. Those who are involved in tribal college education must ascertain what learning strategies are best suitable for students. More importantly, students must be aware of their own learning strategies that will allow them to achieve academic success. From this study, tribal college communities can better enhance and further the educational needs of their learning process and educational endeavors.
REFERENCES


Burrichter & K. R. Lape (Eds.), The adult learner. DeKalb, IL: Northern Illinois University.


LOCAL HISTORY

You have gotten a book on the history of Fort Peck because you want to be able to tell friends and visitors interesting facts and stories about Fort Peck. How likely are you to use the following strategies to learn everything you want to learn and remember about the history of the Fort Peck area?

1. Thinking through what kind of stories or facts you want to learn
2. Setting aside a specific time when you are going to study local history
3. Checking the card catalogue at the college library to see if there are other history books on the Fort Peck area
4. Looking for the complete story behind popular interpretations of local history
5. Stopping to think about how nice it will be to have such stories to tell friends and visitors
6. Checking to see if this book and author are trustworthy sources for information about Fort Peck
7. Comparing your understanding of how history generally develops with your local history to determine what you need to learn
8. Stopping to reassure yourself that you can find plenty of interesting facts about Fort Peck
9. Painting a mental picture of the area as a setting for the story you want to remember
10. Discussing your ideas with elders to see if their insights are different from what you are learning
11. Jotting down notes about the major points you want to remember
12. Asking yourself whether you have stories that would be of interest to the various types of visitors you expect
13. Remembering what it might have been like to live in the Fort Peck area in the beginning of the 1900's to check if these stories have been glorified over time
14. Deciding when the information you have gathered is adequate for telling interesting stories
15. Accepting the author's account of many past events in the Fort Peck area but continuing to look for information that may better explain interpretations given by the author
A lot of people have been concerned about an issue on the Fort Peck Reservation. Two of your friends want you to help them put together a letter to the editor the Wotani that would state your side of the case. You agree to help plan the letter, but you realize that you first must know more about this issue and about the attitude of others toward it. How likely are you to use the following learning strategies in learning about the issue and in preparing an effective letter to the editor?

1. Deciding what methods work best for you in analyzing issues
2. Focussing on learning about the issues rather than worrying if you can write an effective letter
3. Reading previous letters to the editor to clarify your position
4. Checking the arguments of those opposing your position to pick out inconsistencies in your ideas
5. Thinking of how the letter could improve the cooperative spirit within your neighborhood
6. Checking with someone outside the neighborhood who knows a lot about such issues
7. Reflecting back to see if you are sticking with your plan of learning
8. Confirming your belief that a statement of your position in a letter to the editor will bring about positive change on the issue
9. Forming a mental outline of the points you hear in discussions that you want to remember until you get a chance to write them down
10. Testing your ideas out on people whose opinions might differ from yours
11. Keeping a list of the points you want to get more information about before you write the letter
12. Thinking about numerous possible solutions that could be used to address this issue
13. Recalling things about people's letters that you found convincing
14. Getting some feedback on your ideas before you sent the letter to the newspaper
15. Thinking about what will happen if the letter is published by the editor
Some of your classmates are talking about new procedures that will affect everybody in your classes. You hear that copies of the regulations are in a manual in the college library. **How likely are you to use the following learning strategies in finding out what the regulations are and what you need to do to keep your job?**

1. Thinking through what is important to know about these new regulations in order to decide what needs to be learned
2. Setting aside an a specific time to visit the library to review the new regulations
3. Finding out if there are other resources where you can get answers to specific questions you have
4. Thinking through how the new regulations will actually change how you go about getting your education
5. Reminding yourself of the difficulties you may avoid by learning the new procedures
6. Deciding to look through the regulations themselves
7. Comparing your understanding of the new regulations with commonly accepted practices in class
8. Reminding yourself that you have always been able to keep up with new procedures related to the college
9. Remembering the new procedures by organizing them according to the daily routine you follow in class
10. Checking with your advisor, instructors, and classmates to find out if they have similar ideas about the new procedures
11. Placing your list of key points about the new procedures in a convenient place so they will remind you of what you have to do
12. Thinking of various ways that you can use the new procedures to improve your class situation
13. Reflecting on past experiences at the library so you can avoid wasting time
14. Asking yourself if there are any parts of the class procedures that still confuse you
15. Beginning to test some of the new procedures in your class to see if they are going to work for you
ASSEMBLING AN ITEM

You buy an item that you can use around the house from a supplier at a very reasonable price. However, when you get it home and unpack it, you discover that it is not assembled. Directions are included. Nobody is willing to put it together for you. You decide to try to put the item together yourself. How likely are you to use the following strategies to learn how to put the item together?

1. Reflecting on whether you learn best by trial and error, by following directions, or by having someone tell you how to do it
2. Resolving to learn how to put the item together rather than worrying whether you can learn to do so
3. Looking at an item that is already put together so you can have a model to examine as you work
4. Looking at all the parts of the item to see if you will need to follow the directions closely
5. Reminding yourself of the money you are saving by putting the item together
6. Phoning a mechanic or someone at the company that made the item if the directions confuse you
7. Keeping the overall task in mind of assembling the item to prevent getting lost in details
8. Reassuring yourself occasionally that you can put the item together
9. Remembering the tools you will need to get by mentally picturing the tasks to be done
10. Talking with a friend who has better mechanical skills than you for encouragement in putting the item together
11. Sorting out the parts that fit together so you will not leave out any part
12. Imagining various ways the item could be put together
13. Recalling similar experiences putting things together to remember what methods worked best for you
14. Taking a break if frustration interferes with figuring out how to put the item together
15. Putting parts of the item together to see if they work even if you are not sure you are doing it right
RECRUITING LEADERS

Your best friend has been asked to help recruit leaders for a task force to investigate drug and alcohol abuse and domestic violence on the Fort Peck Reservation. You have volunteered to help study what good leaders are like and to recruit good leaders. How likely are you to use the following strategies in learning how to recruit leaders?

1. Asking yourself what specifically needs to be done in the Fort Peck community before identifying the most appropriate leaders

2. Reminding yourself to focus on learning about leadership rather than worrying about being able to talk people into volunteering

3. Checking with elders to obtain their advice on possible community leaders

4. Reviewing your decisions to see if friendship for certain people has influenced the suggestions you have made

5. Thinking about how your efforts will help the Fort Peck community deal with violence and abuse

6. Examining closely the qualifications of those suggested as leaders by talking to several people who have worked with them

7. Reflecting back to see if you are sticking with your learning plan

8. Feeling confident you will be able to convince those you identify as good leaders to volunteer their services

9. Thinking through what you will do in the interview process so that you will be prepared when you talk to potential volunteers

10. Talking with community leaders to test out your opinions on the qualities of a good leader

11. Using a notebook or note cards to keep track of ideas that you want to remember

12. Thinking of various possible ways of recruiting good leaders

13. Recalling similar experiences you have had in selecting leaders so you can remember what worked best

14. Asking yourself if there are any traits of good leaders about which you are still confused

15. Thinking through what could be done if those who are selected turn out to be poor leaders
You have recently visited the doctor and discovered that your blood sugar level indicates possible diabetes. You have been advised to regulate this condition through diet and activity. You are now left with the task of learning about proper nutrition and of changing your eating habits. Your next checkup is in six weeks. **How likely are you to use the following strategies in learning what you need to do in order to change your eating habits?**

1. Making a plan that will help you learn enough about diabetes and healthy eating habits

2. Focussing on learning about healthy food choices instead of just worrying

3. Getting a book that has recipes for diabetic meal plans and information on diabetes from your local book store

4. Checking for other ways of regulating your blood sugar level besides changing your diet

5. Reminding yourself how nice it would be to regulate your blood sugar level by your next visit to the doctor

6. Setting up an appointment with a dietitian to help you make sense of all the information you have been receiving and hearing about

7. Checking to see if what you are learning is actually helping you solve your diabetes

8. Reminding yourself you have been able to learn new health practices before

9. Organizing foods into certain categories to help remember what foods can help regulate your blood sugar

10. Calling several friends who have had diabetes to discuss what lifestyle changes worked best for them

11. Placing a healthy eating for diabetes information sheet on your refrigerator as a reminder to change your eating habits

12. Studying your eating habits so you can set priorities on which changes will have the most impact on regulating your blood sugar

13. Reflecting on previous experiences you have had with diets to know what techniques and attitudes work for you

14. Revising your learning method if you find you are becoming confused

15. Deciding to implement several changes in your eating habits and food choices with the understanding that you will periodically check their effectiveness