MONTANA STATE UNIVERSITY

Information sources and methods used by progressive farmers in the learning process
by Larry Lowell Stephens

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:
In this world of constant change, some of the most significant changes essential to the survival of mankind have taken place in the area of agriculture. Farming methods, equipment, and plant varieties have become obsolete as new and better alternatives have been developed to increase production and preserve the resources available. These changes in farming practices have important practical implications for farmers.

There is a need for an increase in understanding how farmers go about gaining new skills, knowledge, or promoting change to meet the demands that are placed on him/her, the family, and the farm. The purpose of this study was to explore and describe the learning procedures and sources used by individual progressive farmers who have been involved in this learning process.

The major data gathering technique was recording perceptional observations and comments gained from 50 interviews with selected progressive farmers from 10 counties in southeastern Idaho. These farmers were selected from local farm support groups who worked with the farmers in each of the counties.

The farmers were active information seekers. They were very self-directed in their learning activities and wanted to use the fastest and easiest methods available to gather information and sought applied learning for the immediate situation. Learning strategies varied among farmers with each farmer being involved with a multitude of learning styles and methods. Each farmer used many sources to obtain information and did not seem to be dissuaded by cost or distance. They demonstrated a great deal of creativity in their use and variety of resources and in their participation in self-initiated experimentation and research.

Farmers of today overcome barriers and obstacles to participate in learning and opt for increasing present knowledge, gaining new skills, and promoting change in their lives as well as on their farms. They seek information in all they do and consider learning, keeping current with new technologies, and accepting change as integral factors to their success.

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by

Larry Lowell Stephens

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ABSTRACT

In this world of constant change, some of the most significant changes essential to the survival of mankind have taken place in the area of agriculture. Farming methods, equipment, and plant varieties have become obsolete as new and better alternatives have been developed to increase production and preserve the resources available. These changes in farming practices have important practical implications for farmers.

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CHAPTER 1

INTRODUCTION

Nearly 400 years ago, colonists came to North America and settled what has become the United States. These settlers cleared the ground and planted crops, and life revolved around the agricultural seasons. Farms gradually prospered and grew. Over time, farming became more sophisticated, and production as well as the land under cultivation increased (National Research Council, 1988).

The way of life differed, of course, from place to place; but for most people, the way of life changed very little from one generation to the next. It was easy for one generation to pass along to the next generation the knowledge that was needed to get along and survive. However, as a result of technological advances and economical forces, this is no longer possible. "Change is now so great and so far reaching that no amount of education during youth can prepare adults to meet the demands that will be made on them" (Cross, 1984, p. 2).

Today, it is becoming increasingly important that farmers, ranchers, and dairymen (hereafter referred to as farmers) be aware of

new developments in research and technological advances in their field or practice and be able to make changes and apply these new techniques correctly. Incompetence and obsoleteness are evidenced in many areas of farming.

Technological and economic forces have led to a reduction in the number of farms and to an increase in the average size of those farms. "In the 1930's, there were 6.3 million farms in the United States. Today, about 2.3 million remain" (National Research Council, 1988, p. 52). In the 1930's, farmers made up 30 % of the United States population; in 1985, only 1.1 % of Americans were full time farmers (USDA Economic Research Service, 1985; U.S. Department of Commerce Bureau of the Census and USDA Economic Research Service, 1986, p. 27).

Hill (1982) indicated that the farmer of today is the most efficient producer in the world. Today's farmer can produce 13 times as much as the farmer of 50 years ago (Domestic Policy Association, 1986). However, the farmer of tomorrow will need to be even more efficient in harnessing the wonders and powers of science and advanced technology to produce more with fewer hours of labor. Farms will be transformed by the advancement of mechanization, computers, telecommunications, energy conservation, environment, genetics, chemicals, and plant research.

There have been vast changes in farm equipment and practices, and there are more far reaching changes just around the corner.

Hill (1982) points out that changes will produce farm equipment similar to aircraft with automatic pilots. Mini-computers will allow the farmers to "punch in" the day's activities and let the machine do most of the work. Farmers can look ahead to the day when all work on the farm will be conducted by automatic machinery, controlled by computer programs, and supervised by television scanners atop monitor towers.

The computer, which is being widely used by farmers today, will permit the farmer to monitor nature. In the future, satellite dishes on the farm will receive signals from orbiting satellites that will transmit weather conditions, helping the farmer to reduce weather risks. Space technology will feed information to computers to identify and measure land kind use, assess crops and predict yields, detect plant and animal diseases and insect infestations, and determine the suitability of soil and land for particular crop or animal production.

The farmer of today and tomorrow will be more concerned than ever with the conservation of soil and water. He/she will reduce soil compaction through the use of lighter equipment. Soil erosion will be

reduced by conservation tillage (no-till or minimum tillage), and other advances will allow more efficient use of our land.

There are also new crops and animals ahead for the American farmer. Major work is underway in the areas of gene splicing and genetic research. In the future, there will be plants that are naturally immune to pests and diseases. Farmers will see the introduction of entirely new crops as well as improved crops and animals. The future for farmers is limitless and growing--growing to meet the needs and demands of today and of the future.

While the daily life of the farmer will still center on the fundamental activities of producing, the farmer of tomorrow will have to master many more skills and his/her knowledge base will need to expand to include more than that which is required today. Phillips (1979) commented that education for farmers is necessary and that in the future uneducated farmers will not be able to compete. He indicated that economic pressures require constant knowledge and refreshing of skills and that farmers would have to continue learning through schooling, in the field, or a combination of both in order to remain economically sound. According to the National Research Council (1988):

> The role of agriculture education today is more important than ever for the professional in agriculture as well as the

consumer, policymaker, and business person. . . . Even more
so than in the past, human skills, creativity, and knowledge
will be fundamental to building and sustaining U.S.
Agriculture (p. 53).

Statement of the Problem

The farmer of today is involved in the process of lifelong learning.

The farmer of today and tomorrow faces repeated adaptations to change

and a lifelong effort to keep informed. Adult farmers do overcome

barriers and obstacles to participate in learning and opt for increasing

present knowledge, gaining new skills, and promoting change in their

life as well as on the farm. How does the farmer go about gaining new

skills, new knowledge, or promoting change to meet the new demands that

are placed on him/her, the family, and the farm? Research conducted in

the area of farmer learning techniques has left these questions

unanswered; yet, in order for agricultural adult educators to aid the

farmer in his/her quest for knowledge, answers to such questions needed

to be determined. The purpose of this study was to discover and describe

the learning processes and sources used by individual progressive farmers

who have consciously or subconsciously been involved in this learning

process.

Significance of the Study

The results of this study are useful in a variety of ways. First, the study has explored the available body of information pertaining to the learning process of adult farmers; how they get new information, experiences and skills; and in which learning methods adult farmers participate. This information has been summarized in this study and represents a distinct contribution to the literature on adult learning.

Second, this study has determined where adult farmers get new information, experiences, and performance skills in the learning process with regards to farming applications. This information has been summarized in this study to aid the agriculture adult educator in his efforts to assist the farmer in the learning process.

Third, there has been very little research conducted with learning methods pertaining to adult farmers. The traditional research on learning methods has focused on learning methods among adults, but nothing that isolates the farmer. Many present methods in the traditional formal programs do not seem to fully achieve the desired results (as indicated by the lack of attendance at existing traditional programs) in meeting the reported needs expressed by the farmer.

Farmers are learning, but the methods being used or promoted by agriculture adult educators are not necessarily what is accomplishing the learning. This study has determined which methods the farmer uses in the learning process. This information will help educators do a better job of meeting the needs of farmers and could also be used to help improve those methods and strategies the farmer uses in his/her learning endeavors.

Fourth, this study provides fundamental knowledge of how farmers gain the needed information and skills necessary to remain up-to-date in their farming operation, so that other farmers can take advantage of these methods which have proven effective.

Fifth, there is a need for studies to provide information to contribute to the growing body of research on self-directed learning among adults. This study has provided information that will be helpful in adding to the existing literature on self-directed learning from the perspective of the adult farmer.

Definition of Terms

Adult: A mature man or woman who has taken the responsibility for his/her own decisions and actions.

Adult Education: Since education is the acquiring of new knowledge, skills, and attitudes, adult education can be described as the process by which a mature man or woman (those beyond compulsory school age) takes responsibility to improve himself/herself through education. It does not have to follow a set curriculum, but encompasses nearly all experiences related to learning. This would not be the kind of learning that happens by chance, but rather the learning which is sought after, whether alone, in groups, or institutional settings, to increase skills, knowledge, or sensitiveness.

Adult Learner: Any adult who engages in some type of activity, formal or informal, in the acquisition of knowledge or skill, in an examination of personal attitudes, or in the mastery of behavior (Hiemstra, 1976).

Farmer: A person who earns his/her living in the business of operating a farm, dairy, or ranch. A producer of agriculture goods. In this study, farmers, ranchers and dairymen will hereafter be referred to as farmers.

Farm: A farm consists of all the tracts of land, contiguous or noncontiguous, under the operation of a single individual or under a group of individuals in partnership, who use this land in agricultural production.

Farm Operator: A person who is actively engaged in operating a farm. This person must be responsible for decision making for production and marketing for the farm which he/she operates in addition to supplying all or part of the labor.

Intelligence: The ability to learn or understand from experience, or the ability to acquire and retain knowledge. Intelligence is in constant process of forming and requires continuous effort in observation and a will to learn and readjust to retain (Lindeman, 1926).

Progressive Farmer: For the purpose of this study, a progressive farmer is defined as a full-time farmer who is moving forward, advancing toward perfection, to an improved state of farming. A progressive farmer is one who is successful in farming as determined by monetary value. He/she must continue to show

progress and improvements as evidence that learning is taking place. The progressive farmer must be technically competent, aware of new innovations, and a sound decision maker. He/she must be actively seeking out new and improved methods, varieties and technologies, and capable of implementing new innovations which he/she feels would be beneficial to his operation.

Self-directed Learning: In it's broadest sense, self-directed learning describes a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles, 1975).

Assumptions

There are several assumptions regarding the design of this study. They include the following:

1. Adults are in the process of learning, whether or not they realize it, and the adult farmer living in rural America is no exception.

2. A farmer keeps up-to-date with change through a process of learning.

3. There are more methods for learning than that of the traditional, formal educational approach. (Examples include discussion groups and self-directed learning.)

4. Qualitative research can be descriptive. The data collected is in the form of words or pictures rather than numbers and is as valuable as non-descriptive research.

5. Qualitative researchers are concerned with process rather than simply with outcomes or products.

6. Progressive farmers are more involved in the learning process than non-progressive farmers.

Limitations

1. The validity of this study is dependent upon the proper selection of a sample which will represent the population being studied.

2. In a qualitative research study, the researcher is the key instrument. The research will be based on how the researcher perceives the information before him or her.

3. Because progressive farmers were the only farmers selected, the sample would not necessarily represent all farmers within these counties.

Organization of the Study

This dissertation is organized into five chapters plus references cited and appendices. Chapter 1 presents the introduction, statement of the problem, significance of the study, definition of terms, assumptions, limitations, and the organization of the study.

Chapter 2 contains a review of selected literature which is considered relevant to this study. It is organized in the following manner: (a) adults as learners; (b) self-directed learning; (c) America's farms; (d) farmers as learners; and (e) the adoption process.

Chapter 3 describes the methodology used in this study, including sample selection, research procedures, and data analysis.

Chapter 4 contains the findings from the study, including an introduction, profile of the sample, design of the interview, demographics, and discussion of the findings.

Chapter 5 summarizes the findings, and states conclusions and recommendations pertinent to the field of adult and agricultural learning.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Learning is lifelong and an ever-changing process. Too often, education is looked at as a terminal action which will end with formal school "despite our lip service to the concept that education is a lifetime process" (Minzey & LeTarte, 1979, p.28).

A knowledge explosion is taking place which is both a cause and a product of constant change. This has further accentuated the need for lifelong learning. Reynolds (1984) suggests that, "successfully meeting the challenge of the knowledge explosion may mean nothing less than the preservation of mankind itself" (p. 19). In the area of sustainable agriculture, this is certainly true. Areas to be covered within this literature review include, (a) adults as learners, (b) self-directed learning, (c) America's farms, (d) farmers as learners, and (e) the adoption process.

Adults as Learners

As Gardner (1968) indicated, the idea that education is something which takes place in a block of time between 6 and 18 (or 22) years of age

is no longer adhered to. It is lifelong. The idea that learning can only occur in a classroom has also been abandoned.

Tough (1971) broadly defined learning as a sustained and highly deliberate effort to learn knowledge or a skill, and he found that 98 % of the adults in his research sample were active learners. It would be myopic indeed to believe that adult learning in agriculture would be any different with regards to involvement in learning.

Learning transactions that are undertaken by adults are multifaceted and very complex. These learning moments occur in every imaginable situation. They are at different levels of importance to the learner and are designed to help the learner toward a variety of cognitive, affective, psychomotor, as well as political ends. Learning is gained through a wide range of formats and methods (Brookfield, 1986).

Adult learning should be perceived as a process that can take place in any setting. Such settings could include families, organizations, work groups, interpersonal relationships, voluntary societies, community groups, and support networks. Often times, learning occurs in places not formally recognized as learning areas. "It will often be the case that the most significant kinds of adult learning that are identified as such by adult

learners themselves occur in settings not formally designed as adult educational ones" (Brookfield, 1986, p.4).

When dealing with learning and learners, one must realize that each person learns differently and each comes from a different background with his own perceptions and set of problems. With an infinite number of problems, there needs to be an infinite number of solutions, and that many resources to accommodate the learner. As Gagne (1971) has observed, every adult's store of prior learning and experiences welds into a distinctive intermediary mechanism through which new experiences and knowledge are filtered. Therefore, one can never predict with certainty how one adult will respond to new ideas, interpretations, skill sets, experiences, or materials being presented (Brookfield, 1986).

Who learns and when, where, and how learning takes place are flexibly determined. Options, choices, and collaboration become major factors affecting learning. Each learner is so unique that it is difficult to generalize any one set of principles that will hold true of everyone. Brookfield (1986) put it this way: "Learning activities and learning styles vary so much with physiology, culture, and personality that generalized statements about the nature of adult learning have very low predictive power" (p. 25). Learners need to attempt to match learning styles to

provide an environment that fits. "Each interested party--parent, (learner), student, teacher--must have the opportunity to make a choice of the kind of education that matches his or her style" (Fantini, 1978, p.6). Lindeman (1926) also asserts that adults are intelligent and desire to expand their intelligence _if_ given the opportunities and _if_ those opportunities fit their needs.

Brundage & Mackeracker (1980) made an ambitious attempt to identify principles of adult learning. These writers identified 36 learning principles. They came to the conclusions that adults are able to learn throughout their lives and that their past experiences can be of help or hindrance to their learning process. It is, however, through such experiences that individuals construct meanings and values that, in turn, determine how they code new stimuli and information. Adults are strongly motivated to learn in areas relevant to their current developmental tasks, social roles, life crises, and transition periods.

Aslanian & Brickell (1980) investigated formal and informal learning activities of adults and found that life events (both internal changes in self-perceptions and changes in external circumstances) provided reasons for learning and created times when adults are especially receptive to new learning.

One principle conclusion from their research was that adults learn

in order to cope with change in their lives. Regardless of demographic

characteristics, almost all of the adult learners whom they interviewed

alluded to their own changing circumstances as their reasons for learning.

Aslanian & Brickell (1980) concluded that:

> Adults never outgrow their need to learn. Change touches
> the life of every adult, although it touches life at some points
> more often than at others and it touches some lives more often
> than others. Whenever change comes, early or late, and to
> whomever it comes, rich or poor, learning is one way of
> dealing with it. There are not types of adults, black or white,
> educated or not, blue collar or white collar, who do not use
> learning to accommodate the changes in their lives (p. 111).

"Most adult learning begins because of a problem or responsibility

or at least a question or puzzle" (Cross, 1984, p.188). Interests, needs,

and desires provide the energy which is the key for learning and

instruction. "When subject matter interests are tallied, practical how-to-

do-it courses rank far above subjects that might be pursued because they

satisfy intellectual curiosity" (Cross, 1984, p. 90).

"Survey research almost always shows high interest in learning for

immediate use" (Cross, 1984, p. 90). Not many adults are excited about

learning just for the sake of learning and storing knowledge for later use,

or about locating answers to questions before they ever have the question. Adults usually will not learn what is not relevant to their stage in life.

What is relevant depends upon the person's particular stage in life from which needs and interests are generated. These needs and interests give rise to an intrinsic motivation to learn (Elias & Merriam, 1980). The authors of one of the initial survey research studies on adult learning, Volunteers for Learning, concluded, "It was quite clear from the results of our study that the major emphasis in adult learning is on the practical rather than the academic; on the applied rather than the theoretical; and on skills rather than on knowledge or information" (Johnstone & Rivera, 1965, p. 263).

This type of relevant learning is also related to Knowles' (1980) assumptions about the characteristics of adult learners. According to Knowles:

> As individuals mature . . . .their readiness to learn becomes
> oriented increasingly to the developmental tasks of their
> social roles; and . . . . their time perspective changes from
> one of postponed application of knowledge to immediacy of
> application, and accordingly, their orientation toward
> learning shifts from one of subject centeredness to one of
> performance centeredness (pp. 44-45).

Hiemstra (1976) has identified three major forces that act unitedly to expand adult awareness of the value of continued learning throughout life. These forces are the onslaught of occupational obsolescence, the pervasive change in lifestyles, and the value system that is a characteristic of the changing American society.

According to Smith (1982), there are four basic characteristics of adult learners which generate certain conditions for learning. These characteristics include an adults special orientation to learning, their experiential base, their particular developmental changes and tasks, and their anxiety regarding learning. Adults learn best when they feel the need to learn and when they have a sense of responsiblity for what, why, and how they learn. Adult learners use past experiences as a resource in learning, so the process and content of the learning must bear a perceived and meaningful relationship to their past experiences. Adults will, also, generally learn best in an environment that is non-threatening, is supportive of experimentation, and allows for different learning styles to be used.

Because individuals are so different and each will have distinctive learning needs as well as learning style, it is difficult to dictate one set mode of learning that will fit all adults. Brookfield (1986) summarized

the following principles of adult learning as presented by writers who

have studied adult learning.

-Adults learn throughout their lives.

-Adults exhibit diverse learning styles and strategies. Their
mental sets, cognitive procedures and information coding are
unique to each individual.

-Each adult learns in different ways, at different times, and
for different purposes.

-Adults generally like their learning activities to be problem
centered or meaningful to their life situations.

-Adults want the learning outcomes to have immediacy of
application.

-An adult's past experiences affect their current learning,
either as an enhancement or hindrance for learning.

-Self-concept of the learner is linked to the effectiveness of
the learning.

-Adults exhibit a tendency toward self-directedness in their
learning.

Self-directed Learning

No concept is more central to what adult learning is all about than

that of self-directed learning. Brockett (1983) has defined self-directed

learning as "activities where primary responsibility for planning, carrying

out, and evaluating a learning endeavor is assumed by the individual

learner" (p. 16). Thus, self-directed learning is a learning process of active participation in the pursuit of change (Brockett, Hiemstra, & Penland, 1982).

Self-directed learning is a major goal of androgogy, which Knowles (1970) defined as "the art and science of helping adults learn" (p. 43). Such learning can take place with or without the help of others; however, an androgogy is directed at enabling people to become cognizant that they should be the originators of their thinking and feelings (Mezirow, 1985).

Framework for Self-directed Learning

In Adults as Learners (1981), Cross presented a conditional framework to accommodate knowledge about what is known concerning adult learners, including Knowles' concept of androgogy and his assumptions. She called this framework CAL, or "Characteristics of Adults as Learners" (p. 235), and declared that "some of the assumptions of androgogy can be incorporated into these CAL continua" (p. 238).

Included in these assumptions are "self-concept," "self-directing," "growing reservoir of experience," and "readiness to learn." Cross considered self-concept as aligned with the development stage continuum. Adults at the higher levels of ego, moral, or cognitive development are able to assume increasing responsibility for the direction of their learning

activities because they have reached higher levels of developmental maturity, which means that their self-concept includes a perception of themselves as self-directing adults. This self-concept and self-directedness are both seen by Reynolds (1984) as functions of developmental growth. Likewise, the assumption of readiness, or the readiness to learn, is depicted as motivation for learning those tasks associated with the life cycle. These tasks are placed on a sociocultural continuum which is related to age or societal expectations regarding age-appropriate behaviors (Reynolds, 1984). The whole adult holistic environment, including an ever-increasing reservoir of experiences, affects this readiness to learn and, for many adults, will lead to valuable, crucial, perhaps critical "teachable moments."

The way these teachable moments are transmitted into learning activities and learning experiences is, somewhat, dependent upon the adult learner's readiness for self-directed learning. This readiness for self-directed learning can be described as "the extent to which individuals perceive themselves to possess the characteristics, attitudes, and abilities which are needed for self-direction in learning" (Reynolds, 1984, p. 6). Furthermore, self-directed learning is an important and common form of

learning, either through preference or necessity, and has been well established as a form of a learning activity (Tough, 1971, 1979).

Some reasons and benefits for self-directed learning have been suggested by Knowles (1975). One of the immediate benefits is that there is evidence that people who direct their own learning learn more things and learn them better than "passive" learners. A second reason was that self-directed learning is "more in tune with our natural process of psychological development" (Knowles, 1975, p. 14), and that an important part of maturing is developing the ability to direct ones own life. A third reason suggested by Knowles is that education is placing a greater responsibility on the learners to initiate their own learning. The final reason, which is a long-term benefit that comes from directing ones own learning, has to do with the ability to learn without being taught. Knowles (1975) stated:

> . . . . it is tragic that we have not learned how to learn without being taught, and it is probably more important than all of the immediate reasons put together. Alvin Toffler calls this reason "future shock". The simple truth is that we are entering into a strange new world in which rapid change will be the only stable characteristic (p. 15).

Tough has also identified advantages of a more practical nature for choosing a self-directed learning approach. According to Tough (1971), some of these advantages include:

-Self-planned learning does away with the potential difficulty of finding someone or something else to plan the project.

-Self-planning allows the learner flexibility to shift direction to meet changing needs.

-The structure that is often part of traditional educational methods or of those planned by others may be frustrating to persons highly skilled at determining their own learning needs and finding the resources.

-Much pride can come from assuming responsibility for planning ones own learning efforts.

Characteristics for Self-Directed Learning

Many studies in self-directed learning among adults have been conducted by researchers such as Tough, Penland, and Coolican. Tough (1971) advised that we regard the adult's learning efforts as an iceberg, and that the attention of professional adult educators has mostly been focused on the one-fifth of the iceberg--professionally guided learning. "Tough proposes that the massive bulk of the iceberg, up to 80% of an adult's learning efforts, consist chiefly of self-planned learning and is ignored by professionals in the field" (Brookfield, 1984, p. 34).

There is an abundance of research on adult learning and on those who participate in various kinds of learning activities. "We know from over thirty recent research studies that for most adults more learning transpires through self-directed efforts than through agency sponsorship. In fact, the typical adult spends about 500 hours annually in independent learning projects" (Smith, 1982, p. 31).

Field research by Tough and Penland on how adult learning is accomplished also implied that the traditional education is not used as much as one would suspect. Group situations where a designated person such as a teacher is responsible for planning the content, sequence, pacing and other aspects for the group account for only 10% of the learning projects according to Tough's research and only 14% according to Penlands research. On the other side of the spectrum, Tough's data showed 73% and Penland's data 80% of adult learning projects were self-planned (Cross, 1984, pp. 189-190). Though their data differ, the results still show a small proportion of adult learning was directed by educated professionals, while a large proportion of the learning was self-directed.

Penland asked adults why they preferred to learn on their own instead of taking courses. The reasons given are shown in Table 1. It is of significance to note that the first four reasons express positive desires to

control their own learning. McCatty (1973) found that in almost half of all self-planned projects the desire to individualize subject matter was an important element. This suggests that a major advantage of self-directed learning is that it allows freedom to determine what is learned.

Table 1. Reasons Why People Prefer Self-Directed Learning

Category	Most Important (percent)
1. Desire to set my own learning pace	46.8
2. Desire to use my own style of learning	37.4
3. I want to keep the learning strategy flexible and easy to change	31.0
4. Desire to put my own structure on the learning project	27.8
5. I wanted to learn this right away and couldn't wait until a class might start	36.2
6. I didn't know of any class that taught what I wanted to know	29.8
7. I don't like a formal classroom situation with a teacher	14.0
8. Lack of time to engage in a group learning program	17.9
9. Transportation to a class is too hard or expensive	5.3
10. I don't have enough money for a course or a class	5.2

(Penland, 1979)

Cross (1981) commented on Penland's findings by pointing out that there are most likely group differences in the reasons people gave for conducting their own learning projects.

> I would predict, for example, that adults of low educational attainment would be somewhat more likely to express negative attitudes toward classes, whereas those who went farther in the formal educational system would reflect more positive attitudes, expressing the desirability of having more control over their learning projects (pp. 192-193).

Tough (1971) found that one of the most important reasons for selecting a certain learning activity was efficiency. In other words, the learner wanted to learn in the fastest, easiest and least expensive way possible, and his or her learning activities were determined with this in mind.

Tough (1971) also found that the majority of adults engage in at least one learning project during the course of a year and that many of these projects are designed and carried out by the individual learner. These as well as other studies support the idea that there is a greater percentage of self-directed learning taking place among adults than most educators had suspected. These studies also show the desire that most adults have to control their own education.

However, Tough (1979) has identified some problems that can hinder one's effectiveness as a self-planned learner. Some of these problems include the lack of awareness of needing help in a learning activity, reluctance or the inability of the learner to locate help, or the difficulties that may arise once a helper has been identified. Some adults may not like to participate in self-directed types of activities and therefore choose alternatives such as traditional learning projects. Brookfield (1986) stated, "There are many individuals who are chronologically adult but who show a marked disinclination to behave in anything approaching a self-directed manner in many areas of their lives"(p. 26).

Attitudes toward Learning

Brookfield (1981) used qualitative research to investigate aspects of long-term learning projects. Through the process of interviewing acknowledged experts in specific fields, where their expertise had been acquired through means other than formal education, he identified several characteristic traits of self-directed learning. Learning was gradual and viewed as on-going in an interminable field. The learners did not feel constrained by the boundaries of traditional subject areas, and success was expressed through acknowledgment of peers. Furthermore, these individuals identified themselves as members of a larger learning

community sharing the same interests, pleasures, concerns and problems; they had the feeling that they belonged to a society or fellowship of learning. Brookfield (1981) concluded that his subjects "used enthusiasts' groups to good educational effect, evolved evaluative criteria for themselves, learned to set their own learning goals, and prompted others to engage in learning" (pp. 26-27).

Limitations in Existing Research

Tough's (1967, 1968, 1979, 1982) research subjects were drawn primarily from the educationally advantaged. Other researchers have followed suit, with the result that most of the individuals surveyed have been from the educationally advantaged. Thus, some have questioned the validity of the research when generalized to all adults. Brookfield (1986) stated it this way:

> The great majority of individuals in these samples have attained an educational level well above the average. To assume that the behaviors exhibited by these educationally advantaged adults will be displayed by adults from a range of different class and ethnic backgrounds is, to say the least, highly questionable (p. 51).

This criticism does not invalidate the research; however, it does make the results questionable when applied to the educationally disadvantaged.

Another limitation to self-directed learning research is that self-direction is not always easily specified or defined. Skager (1979) stated: "A self-directed learner is not necessarily an individual learning autonomously, though this may often be the case. Self-directed learners may be equally likely to seek help from others and to work cooperatively" (p. 519). Even (1982) contended that people who exhibit an analytical learning style benefit more from a self-directed emphasis, whereas people who have more of a social orientation are not as likely to succeed with self directed learning methods. Brockett (1982) , however, offered a criticism of this type of reasoning, stating that:

> It reduces the tendency toward self-direction into an either/or dichotomy, thus failing to consider the complex factors that often interact to make the case for viewing self-direction as a continuous variable, not an all or nothing construct (p. 24).

A major weakness with using quantitative research to study participation in self-directed learning is value imposition, meaning that if one is not participating in education as defined by the particular study, he or she is classified as not learning. Rockhill (1982) pointed out that this is not true, and goes on to state, "It would seem useful to leave definitions open and focus instead upon the range of activities engaged in in order to

learn any particular thing" (p. 7). Such problems do reveal the complexity that is associated with self-directed learning research.

America's Farms

There are 2.3 million farms in America, and each one is uniquely different. There are very small farms and very large farms, and many farms that fall somewhere in between on the scale. As determined by gross sales, there are about 112,000 large farms in this country. Each of these farmers sells over $200,000 worth of farm produce each year. They make up fewer than 5% of all farms but they produce almost half of all the farm products of American farmers (Lapinski, 1986).

There are approxiamtely 1.5 million small farms in America where the annual sales are less than $40,000. They produce about 12% of all farm products. Although the owners of these farms think of themselves as farmers, many do not depend on their farms for a major part of their income (Lapinski, 1986).

Between the large farms and the small farms there are about 520,000 middle-sized farms whose owners make between $40,000 and $200,000 a year before expenses. The owners of these farms work the land themselves (Lapinski, 1986).

The profile of the American farms has undergone some interesting turns in the recent past. Farms have increased in size, yet decreased in number, and statistics show that these farms are producing more with fewer acres of land in production. "In 1986, farmers produced 20% more food than in 1976" (Lapinski, 1986, p. 11). According to Smith (1980), one of the reasons farmers are able to produce more food today on less land is the greater knowledge base among farmers and their ability to implement change in their farm practices.

Farmers as Learners

Several recent studies have examined aspects of farmer learning to determine where farmers obtain information and the importance of educational programs in assisting farmers. Authors of these studies include Crawford (1969), Stadlman (1973), Awa and Van Crowder (1977), Smith (1980), Garoutte (1988), Matheson (1989), and Carlson and Guenthner (1989). In comparing the findings from these studies, it must be realized that all these studies dealt with different populations and looked for different types of information. Crawford (1969) studied Iowa farm operators under thirty years of age, and Stadlman (1973) did a five-year follow-up study of the same farmers. Awa and Van Crowder (1977)

focused on farmers in upstate New York, while Smith's (1980) research involved young farmers in the mid-west. Garoutte (1988) examined public perception of the extension services in Montana. Matheson's (1989) research dealt with farmers in the Northern Plains and Rocky Mountains involved in sustainable agriculture, and Carlson and Guenthner (1989) researched Idaho potato producers. Points of similarity of these studies include that each used surveys and a quantitative design, and each asked the participants to identify their preferred source or vehicle for receiving new information.

From the choices given participants, all but two of the studies selected "farm magazines" as "the most" or "one of the most" important source. Garoutte (1988) found the "Extension Service" as the most important source, and Matheson (1989) found that 75 % of the respondents listed "other farmers" as their most valuable information source. Smith (1980) reported that farm magazines were especially of high value to the higher profit respondents, large acreage partnership operators, well-established farmers, and higher educated individuals, with his respondents subscribing to an average of 4.5 farm periodicals.

A study done by Awa and Van Crowder (1977) uncovered some interesting data on the principle communication channels used by farmers

in upstate New York. They found that of those information sources mentioned by respondents, extension sources and magazines stood out as the dominant messengers of relevant information. However, Awa and Van Crowder further observed that friends and relatives and innovative farmers were the most influential sources when the farmers made farm practice decisions.

According to Carlson and Guenthner (1989) who researched Idaho potato producers, the information source with the greatest degree of reliability as evaluated by farmers switching to new farm practices was reported to be other farmers in the area who were using the new practice. Other trusted sources included extension potato specialists and research from agricultural experiment stations. Sources considered nearly as good a guide as those listed above were independent consultants, county agents, processor/ shipper fieldmen, and friends and neighbors. Farm magazines were considered somewhat less reliable as a source even though, as reported earlier, it was chosen by the respondents as the most used source.

The farmers in Matheson's (1989) study were asked if they needed more information. "Ninety per cent of all those surveyed indicated they wanted more information" (p. 8). When asked how they would like this information conveyed, their selection for delivery mechanisms, from most

to least favored, were farm tours, workshops, magazines, research data, books, and hands-on-training. By contrast, Carlson and Guenthner (1989) reported the preferred methods for receiving information to be reading and "learn-at-home" materials which were highly preferred by more than half of the respondents. Workshops, professional reports, and individual consultations were also preferred, but not as highly.

As a recommendation from his research, Crawford (1969) called for increased emphasis by agriculture teachers to make farmer adult education programs an integral part of their overall vocational agriculture program. He observed, however, that the surveyed farmers were not very active in educational programs. In fact, two-thirds of this group had never attended any formal educational program since high school. This correlates with one other common item worth noting. Most of the studies indicated that respondents placed a high value on receiving more education/ information, yet most of the studies reported that participation and attendance in education and extension meetings was declining.

Clinics, short courses, and product awareness schools offered by commercial companies appeared to attract the largest attendance of farm operators in Crawford's study. Approximately 80 % of the respondents had attended some form of commercial sponsored program.

The Adoption Process

Much attention has been focused on the diffusion process and the adoption of new technologies. One reason for this interest is that the process of getting a new idea adopted, even when it has many advantages, is often very difficult. Benjamin Franklin (1781) once said, "To get the bad customs of a country changed and new ones, though better, introduced, it is necessary first to remove the prejudices of the people, enlighten their ignorance, and convince them that their interests will be promoted by the proposed changes; and this is not the work of a day" (Rogers, 1983, p. 1).

In many fields, there is a great difference between what is known and what is actually put into practice. Most innovations require a long period, often years, from the time they become available to the time when they become widely adopted.

Rogers (1983) defined diffusion as the process "by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). He further defined the rate of adoption as "the relative speed with which an innovation is adopted by members of a social system" (p. 23). When the number of individuals adopting a new innovation is plotted on a cumulative frequency basis over

time, the distribution results in an s-shaped curve. In the early stages, few individuals adopt the innovation. Soon, more and more individuals adopt and the diffusion curve begins to climb. The growth rate levels off as fewer individuals remain who have not yet adopted (Rogers, 1983).

Most of the research in this area has tried to determine who the early adaptors are and has been designed from the researchers or technologists point of view; that is, to determine how quickly new ideas can be diffused or how to influence the acceptance of an innovation. One deficiency of this type of study is that the individual adaptor's perceptions of the innovation and his/her personal interests, needs and environment have not been considered.

Diffusion and Adoption Research

Research on the diffusion of innovations started in different independent disciplines. Educational researchers studied the spread of new teaching ideas among individuals within schools while rural sociologists investigated the diffusion of agriculture innovations to farmers.

Although several diffusion studies had been completed during the 1920's and 1930's, this whole area of research gained impetus with the now classical Iowa hybrid-corn study of Gross and Ryan in the 1940's.

Their 1943 investigation of the diffusion of hybrid-seed corn, more than any other study, influenced the methodology, the theoretical framework, and the interpretations of later diffusion research (Rogers, 1983). The study was important because it formed the basis of intensive research for years, initially in agriculture, and then in other areas such as medicine, consumer research, and education.

In the Ryan and Gross (1943) study, farmers were assigned to adopter categories on the basis of when they adopted the new hybrid-seed corn . When they compared later adopters to innovators, they found that the early adopters had larger-sized farms, higher incomes, and more years of formal education. The innovators were also more cosmopolitan. The typical farmer moved rather slowly from awareness-knowledge of the innovation to adoption. The innovation-decision process from first knowledge to the actual adoption decision averaged about nine years for all respondents, a finding that led to the realization that such innovation-decision processes involved much deliberation by most farmers.

The typical farmer first heard of hybrid-seed from a salesman, but neighbors were the most frequent channel leading to persuasion. Salesmen were more important channels for earlier adopters, and neighbors were more important for later adaptors. The farmer-to-farmer exchange of

personal experiences with use of the hybrid-seed seemed to lie at the heart of diffusion (Rogers, 1983).

Ryan and Gross (1943) explained that the adoption of hybrid corn spread through the two Iowa communities as a kind of social snowball. From their study, they concluded that the behavior of one individual in an interacting population affected the behavior of the other members. The demonstrated success and acceptance of some farmers offered a new stimulus to the remaining ones, and they felt that the heart of the diffusion process consisted of interpersonal network exchanges and social modeling among the adopters and those who then would be influenced to do so (Rogers, 1983).

Steps in the Adoption Process

From the Ryan and Gross (1943) study and other investigations that followed, rural sociologists discovered an innovation-decision process in which individuals (or other decision-making units) passed from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and finally to confirmation of this decision. The five main steps in this process are: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation (Rogers, 1983, p. 20).

An individual sought information at different levels in the innovation decision process in order to decrease uncertainty about the innovation. At the knowledge stage, an individual obtained information about the technological innovation. He or she wanted to know what the innovation was, how it worked, and its possible advantages. In the persuasion, decision stages, the individual sought evaluation information in order to reduce uncertainties about the innovations expected consequences or outcomes. The decision stage led to a decision to make full use or partial use of the innovation as the best course of action which was available or it led to the rejection stage where the decision not to accept the innovation was solidified.

The degree of uncertainty in all of these steps can be reduced by knowledge. "Information is the difference . . . that affects uncertainty in a situation where a choice exists among a set of alternatives" (Rogers, 1983, p. 35). When considering decision influencing information, researchers found that "most individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective evaluations of near-peers who have adopted the innovation" (Rogers, 1983, p. 36). These "near-peers" then serve as innovation model acceptors whose innovations, if successful, tend to be followed by others.

Adopter Categories

Not all individuals in a social system adopt innovations at the same

time. Individuals differ and their rate of adopting new innovations vary

according to these differences as well as the way they perceive new

innovations and how they pertain to their particular needs. According to

Rogers (1983), individuals adopt new innovations in a time sequence and

they may be classified into adopter categories on the basis of when they

first begin using the new idea. These adopter categories have been

catagorized by Rogers as follows:

> (1) Innovators are venturesome. The innovator seems to be
> obsessed with venturesomeness and the testing of new ideas.
> He or she plays an important part in the innovation process by
> "launching" new ideas in the social system. The innovator
> must also be willing and financially able to accept occasional
> setbacks when a new idea proves unsuccessful.
>
> (2) Early adopters are respectable. The early adopter is a
> more integrated part of the local social system than the
> innovator and, of all the adopter categories, has the greatest
> degree of opinion leadership in a social system. The early
> adopter is respected by his or her peers and is the
> personification of the successful user of new ideas. The part
> the early adopter plays in the adoption process is to decrease
> uncertainty about new ideas by adopting them and relaying an
> evaluation of them to near-peers through an interpersonal
> network.

(3) Early majority are deliberate. The early majority adopt new ideas just ahead of the average members of a social system. They may deliberate for some time before adopting a new idea and seldom lead, though they will follow with "deliberate willingness." In the diffusion process they provide an important link between the early and the relatively late adopters.

(4) Late majority are skeptical. The late majority adopt new ideas after the average members of a social system and not until most others in their social system have already done so. Innovations are approached cautiously, and most of the uncertainty of a new idea must be removed before the late majority feel safe to adopt. Adoption may be due to economic necessity or increased social pressures.

(5) Laggards are traditional. Laggards are the last to adopt an innovation. Decisions are often based on what was done in the past generations. They are very isolated in social networks and generally associate with others who have similar traditional values. They tend to be suspicious of innovations and change, and when they do finally adopt an innovation, it may already have been replaced by a more recent idea that is being used by the innovators (Rogers, 1983).

Innovative Behavior

Farmers who own larger farms, who enjoy a higher socioeconomic status, and who have more mass communication opportunities are more innovative in adopting new agriculture technologies. Perhaps a farmer's failure to adopt innovations is due more to a lack of opportunities rather than to traditional resistance to change. Farmers with more land, money, and knowledge can obtain quicker and fuller input and information about

an innovation. Since these farmers adopt innovations earlier, they stand to gain more of the benefits of innovations such as "windfall profits" that occur to the innovators (Bordenave, 1976). The question might be asked: Are people innovative because they can afford to be, or can they afford to be because they are innovative?

The majority of farmers who lack resources cannot easily adopt new innovations until the risks are lowered. In summary, Rogers stated, "Individuals who have greater resources usually benefit more from the innovations introduced by development agencies than those individuals who have fewer resources, thus widening the socioeconomic benefit gap" (Rogers, 1983, p. 126). Although there seems to be a correlation between wealth and innovativeness, economics does not offer a full explanation of innovative behavior. For example, although agricultural innovators usually are wealthy, there are many wealthy farmers who are not innovators.

Another suggestion for innovative behavior lies in the idea that one cannot seek an innovation until one knows that it exists, and one will not seek an innovation until he or she recognizes the need. It is argued that one becomes aware of an innovation quite by accident. Individuals tend to expose themselves to ideas that are in accordance with their interests,

needs, or existing attitudes, and these provide the energy which is the key for learning and instruction. Hassinger (1959) argues that individuals will seldom expose themselves to messages about an innovation unless they first feel a need for the innovation, and that even if such individuals are exposed to the innovation, such exposure will have little effect unless the individual perceives the innovation as relevant to his needs. An example is the farmer who drives past one hundred miles of hybrid corn and never "sees" the innovation.

Characteristics of Innovators

From previous research related to innovativeness, several generalized characteristics of innovators have emerged. Rogers summarized some of these characteristics as follows:

(1) Earlier adopters are not different from later adopters in age.

(2) Earlier adopters have more years of education than later adopters have.

(3) Earlier adopters are more likely to be literate than are later adopters.

(4) Earlier adopters have a higher social status than later adopters.

(5) Earlier adopters have a greater degree of upward social mobility than later adopters.

(6) Earlier adopters have larger-sized units (farms, companies, and so on) than later adopters.

(7) Earlier adopters have more specialized operations than later adopters.

(8) Earlier adopters have a greater ability to deal with abstractions than later adopters.

(9) Earlier adopters have a more favorable attitude toward change than later adopters.

(10) Earlier adopters are more able to cope with uncertainty and risk than later adopters.

(11) Earlier adopters have a more favorable attitude toward education than later adopters.

(12) Earlier adopters are less fatalistic than later adopters.

(13) Earlier adopters have higher levels of achievement motivation than later adopters.

(14) Earlier adopters have higher aspirations (for education, occupations, and so on) than later adopters.

(15) Earlier adopters have more social participation than later adopters.

(16) Earlier adopters are more highly interconnected in the social system than later adopters.

(17) Earlier adopters are more cosmopolite than later adopters.

(18) Earlier adopters have more change agent contact than later adopters.

(19) Earlier adopters have greater exposure to mass media communication channels than later adopters.

(20) Earlier adopters have greater exposure to interpersonal communication channels than later adopters.

(21) Earlier adopters seek information about innovations more actively than later adopters.

(22) Earlier adopters have greater knowledge of innovations than later adopters.

(23) Earlier adopters are more likely to belong to highly interconnected systems than are later adopters (Rogers, 1983, pp. 251-252, 257-259).

From diffusion research, a set of generalized characteristics for each adopter catagory (innovators, early adopters, early majority, late majority, and laggards) has emerged. The differences in these categories would suggest that for change to take place, different approaches should be used with each adopter category and that one of the chief uses for this type of research is to provide a basis for audience segmentation strategies for diffusion agencies (Rogers, 1983). Of course, as in all generalized statements, there is danger in placing too much credence on the rigidity of the breakdown of the catagories. Overlaps exist between catagories and there are exceptions to characterizations within catagories.

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Summary

Learning is taking place all of the time and in many different places. Adults are constantly receiving information and processing it through past experiences and knowledge. Often, learning occurs in places not formally recognized as learning areas. Adults desire to expand their knowledge base if given the opportunity, provided the opportunity fits their needs.

There is need to contribute more information to the growing body of research on self-directed learning, especially when it comes to the self-directed learning among farmers. Research studies show that more adult learning transpires through self-directed efforts than through agency sponsorship, but is this true also of the American farmer? Research in the area of farmer learning indicates that current traditional programs offered to the farmer do not seem to fully achieve the desired results, as indicated by the decreasing participation in these programs, even though most farmers reportedly placed a high value on receiving more information.

There are approximately 2.3 million farms in America. These farms are increasing in size and are decreasing in number. Among these farms and the farmers that operate them, changes are taking place that have important practical implications for farm operators. Becoming

aware of these changes and gaining the necessary knowledge to evaluate new technologies comes from a variety of sources. Research in the innovation diffusion area has uncovered much that helps us better understand the adoption of new innovations and the continuing need for adult learning. In many fields, there is a great difference between what is known and what is actually put into practice.

In the review of the literature, there seems to be little information available to help farmers learn how other farmers gain information pertaining to new technologies and skills necessary for them to remain up-to-date in their farming operations. Farmers need to have this information available to them so that they can take advantage of the methods other farmers have used which have proven effective.

CHAPTER 3

METHODOLOGY

The review of the literature makes it obvious that farmers are involved in learning and in change. It also suggests that there is a great deal of learning taking place among adults, and that for the adult farmer living in rural America this is no exception.

Much research has been done in the area of what adults want to learn and in what programs they participate. "Judging by the number of journal articles, dissertations, and studies devoted to it, the topic of participation in adult learning is probably the most enduring research concern since investigation of this field began"(Brookfield, 1986). There will, undoubtedly, be much more research in this area which will promote the further understanding of the adult learning process. However, when it comes to how rural Americans, more precisely the American farmers, participate in learning, how they learn, what they learn, what styles they use, and how increased learning affects their change process, little research had been done.

Smith (1980) points out that farmers are learning, but the problem is that adult educators do not know how learning is taking place among the farmers (that is, methods, styles, strategies), and in spite of the amount of effort being made in agriculture education, only a small percentage of farmers participate and are being reached and helped.

The main purpose of this research was to describe the learning process used by individual farmers who have consciously or sub-consciously been involved in the learning process. The research design method used for this study was a naturalistic approach. The major reason for choosing this type of design was the need to uncover and discover information concerning learning among farmers.

A rationalistic study could have been designed if the types of styles and strategies of learning being used by the farmer were known. For example, a quantitative study would be very effective in determining how a farmer who uses a computer in his farming operation learned to use that computer, that is, classes, computer store assistance, other individuals, self-study, or other means. However, what was needed to answer the research question was not a comparison, focused on the systematic, objective, and quantitative measurement of variables and their relationships, but rather, the 'hows' and 'whys' of adult farmer learning.

When dealing with learning and learners, it is essential to realize that each farmer is different and each comes from a different background. A naturalistic approach allowed for consideration of individual differences among farmers in their own environment and enabled the researcher to better understand how the farmers perceived learning.

A naturalistic approach is a science of discovery. It is an inductive approach to research that focuses on social interaction and relies heavily on data from interviews and observations to build theory grounded in the data rather than to test theory as rationalistic inquiry does (Bogden & Biklen, 1982; Dobbert, 1982; & Guba & Lincoln, 1981). For example, when the purpose of an investigation is to investigate an area where it is important to look at feelings, thoughts, values, perceptions, or actions, description is necessary and a naturalistic study is called for.

In order to obtain the desired types of data, the major data gathering technique in this study was the recording of the interviewer's perceptional observation gained from conducting interviews. A selected sampling of the population of progressive farmers within a selected area was personally interviewed. Progressive farmers were selected based on the assumption that progressive farmers are more involved in the learning process than non-progressive farmers.

Sample Selection

In this study, the major data was gained from conducting interviews within a 10 county area of Southeast Idaho. These counties consisted of Fremont, Madison, Teton, Jefferson, Bonneville, Bingham, Power, Bannock, Cassia, and Butte. All of these counties have an agricultural base with agriculture being the largest industry (Bureau of the Census, 1987) and thus were an appropriate representation of a much larger population. Also, limiting the area of the research to these ten counties which are all located within a 100 mile radius of the home base of the researcher allowed time for repeated visits to the farmers.

The sample of the farmers asked to participate in this study were selected from a population of farmers which met the following criteria:

1.   The farmers selected were adults between the ages of 25 and 70 years of age and had been actively involved in farming for the preceeding 5 years. Farmers within these bounds were most likely to look at farming as their future occupation or had been involved in farming long enough to recognize learning procedures which work for them.

2.   The farmers selected were full-time farmers. Part-time farmers could very well be engaged in learning; however, the motivation

for learning and the methods of learning might differ from those of full-time farmers whose livelihood depends upon their success in farming.

3.   Farmers selected were all farming 500 or more acres. Those farmers farming less than 500 acres probably would not have given a true representation of the progressive farmer within these 10 counties.

4.   Farmers selected were all determined to be progressive farmers by the sample selection corps.

The researcher realized that such a determination of progressive farmers is a value judgment. In order not to bias or skew the research sample, these value judgments were made by other individuals involved in assisting farmers. These assist groups included, but were not limited to the following: fertilizer dealers; pesticide and herbicide applicators; irrigation companies; soil and water conservation services; extension agents; seed and feed suppliers; fuel suppliers; farm equipment dealers; farm organizations; financial institutions; agricultural educators; grower organizations; livestock associations; and other farmers.

To select the population from which the sample was taken, the researcher contacted individuals from these and similar farmer support groups within each county. After identifying the criteria for the selection of selected farmers, these individuals were asked to identify, in their

opinion, the five most progressive farmers in their county (See Appendix

A--Sample Selection Letter and Appendix B--Progressive Farmer

Selection Form). The names of the five individuals who appeared most

often on the lists from the support groups from each county were the

individuals selected for the sample. Each farmer had to be selected a

minimum of three times in order to become part of the sample. However,

all participation was on a voluntary basis. If a selected farmer was not

willing to participate, another was selected from the county represented.

In this study, the sample size was 50 farmers. This number was

estimated as adequate to generate enough information to answer the major

questions asked in the study.

Research Procedures

The progress of a naturalistic study is guided by findings as they

emerge. It is, therefore, important not to become rigid in a prestudy plan

but to be prepared to modify expectations or change design in order not to

spend too much time searching for the "right study" when it might not

exist (Bogdan & Biklen, 1982).

After the selection process, each of the progressive farmers in the

sample was contacted by telephone. The research project was explained, as

well as how their name had been selected. Their participation was requested and an interview appointment at their farm or office was set.

Interviews in this study were organized in the following manner. At the interview meeting, the interviewer briefed the respondent as to the purpose of the interview and attempted to set the farmer at ease. The interviewer explained the manner in which responses were to be recorded, and permission from the respondent was obtained. The interviews were recorded on a mini tape recorder and fieldnotes and pictures were taken for later analysis. A copy of the interview summary was sent to each farmer who requested it for verification and clarification.

Sample questions for the interview are included in Appendix D-- Interview Form. However, broad and open-ended questions were asked, leading to discovery. The interviewer then led the discussion in a direction determined by the respondent's answers.

The major objective of the questions asked during the interview process were to gain answers to the following research questions:

(1) Where do progressive farmers first receive information regarding new methods or innovations?

(2) What sources are used most by progressive farmers to obtain information about new innovations or methods?

(3) What information source is most relevant to the progressive farmer's needs?

(4) What methods are most often used by progressive farmers in the learning process?

(5) What are the preferred methods for progressive farmers to gain information?

Data Analysis

Data analysis is the process of systematically searching the information gathered. Analysis involves working with this data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns of variance or of central tendency, discovering those things that are important that are there to be found.

Although it is possible to collect data and to conduct all the analysis later, for this study the data was collected, organized, and analyzed simultaneously from the beginning. This process of jointly collecting, coding, and analyzing information led to the discovery of patterns and their meanings. These patterns and meanings formed the basis for generalizations which were then further tested through continued observation and questioning. This process also led to decisions regarding

what data to collect next in order to develop theory as it emerged (Glaser & Strauss, 1967). "Effective evaluations provide opportunities to improve. In order to be effective, evaluation designs must properly reflect the nature of the enterprise being evaluated and the overall purpose for which the evaluation was initiated" (Fellenz & Conti, 1984, p. 1).

Material was sorted so that information bearing on a given topic could be physically separated from other data. This material was organized so that it was able to be retrieved and read. This was done by a coding and scoring process through the use of a Macintosh SE computer and took place as soon as possible after each interview. From the fieldwork interviews and the information acquired from the sorted data, the importance of the items found in the analysis was decided and the important outcomes of this study were determined.

CHAPTER 4

FINDINGS

The purpose of this study was to investigate how progressive farmers of today overcome barriers and obstacles to participate in learning and opt for increasing present knowledge, gaining new skills, and promoting changes demonstrated in part by the adoption of new techniques.

This chapter presents and discusses the results of an analysis of the data that was obtained from interviewing 50 selected progressive farmers that comprised the study sample. Previous research conducted in the area of progressive farmer learning has left several questions unanswered. Since learning is an individual process and no two individuals are alike, a naturalistic evaluation design was selected in order to generate data which was not of a comparative nature but rather demonstrated the "hows" and "whys" of farmer learning. A naturalistic approach allows for individual differences among farmers in their own environment, is neither based on any preconceived ideas from the researcher nor allows previous research to bias results, and enables the researcher to better understand how the farmers perceive learning and how learning actually takes place.