

A STUDY OF INFORMAL EDUCATION AND THE
ADOPTION OF FARM PRACTICES IN
GREAT COUNTY, KANSAS

by

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INTRODUCTION

This study investigates the relationship between the tendency to adopt recommended farm practices and participation in educative activities. Studies in rural diffusion have identified four categories of adopters: innovators; early adopters; early majority adopters; and majority adopters (and an additional category: non-adopters). A general association has been established between age, formal education, and socio-economic status and the tendency to adopt early, late, or not at all. One variable which has had little attention is that of participation in educative activities in adulthood.

This study explores participation in educative activities as a factor which may also differentiate those persons who adopt at varying rates and suggests that participation is more characteristic of certain adoption categories than of others.

For the purpose of this study adopters were classified as follows:

(1) innovators, (2) leading adopters, (3) majority adopters, (4) late adopters (in most studies considered as non-adopters). The study suggests that the innovator is most likely to be a person who is curious and inquiring. By definition, he is open to new ideas and is willing to test them in practice. We would expect him, among those studied, to be in the highest rank in terms of participation in educative activities. The following hypothesis is suggested:

high scores on an "educative activities index" will be associated with "innovators;" average scores with "leading adopters;" below average with "majority adopters;" and low scores with "late adopters."

As agriculture becomes more complex and problems of adjustment more acute, it becomes increasingly important to know more about the educational processes which lead people to accept new ideas and adopt them to their individual enterprises. Such information is of particular value to groups which work and deal with farm people. One of the major problems of the Agricultural Extension Service is that its recommendations for improvement of practices are not accepted on many farms when they are needed.

The procedure used in this study was to make a survey to obtain the following data: (1) age, (2) formal education, (3) tenure status, (4) size of farm, (5) level of living, (6) farm income, (7) adoption rate of recommended practices, and (8) sources of informal education.

In preparing for this study, it was important to obtain sufficient knowledge and understanding of the following: (1) the adoption process, (2) classification of adopters, (3) educational opportunities. Numerous books, leaflets, circulars, in service training schools, and personal knowledge of county conditions were used in an effort to carry out the study. A list of reference materials follows this study.

REVIEW OF LITERATURE

The Philadelphia Agricultural Society, organized in 1785, was the beginning, nationally, of an effort to provide an agricultural education program for the people. The Philadelphia Agricultural Society was the stepping stone to many other organized agricultural agencies -- namely, the Farmers Institut, the Department of Agriculture, the land - grant colleges, the experiment stations, and the cooperative demonstrations. Kansas established its agricultural college in 1863 and the first experiment station in 1887. It was followed by the first county agricultural education agency, the County

Farm Bureau, which was organized in 1912. In 1914, the Smith Lever Act was passed by Congress. This act created the extension service and provided financial assistance to those states desiring the service. The Kansas Legislature, in 1951, revised the Farm Bureau Law, and by means of this revision, extension became a cooperative endeavor between the County Extension Council and Kansas State University.

Changes that have occurred in agriculture since World War II are phenomenal. Production per acre and per animal unit has increased 12 percent. Output per man on the farm has increased 85 percent. Production per unit of output has been the result of increased efficiency. Production per man is largely due to the substitution of capital for labor.

A comparison of the Farm Management Association records shows the explosion which is occurring in Kansas agriculture. Capital managed by the 231 operators in association number 1 (northcentral) was \$72,094.71 in 1958 and \$85,591.70 for 224 operators in 1959.¹ In Southeast Kansas the increase in capital managed has increased 23 percent from 1950 to 1959.

At the present rate of decrease in the number of farms there will be about 75,000 farms in Kansas in 1975. The commercial farmer then will be a big business man associated with other big business. The number of farms in Geary County has decreased from 603 in 1950 to 455 in 1959. At this rate of decrease in the number of farms there will be about 219 farms in Geary County in 1975. Table 1 shows the change in farms by size from 1950 to 1959.

¹ Farm Management Summary and Analysis Report, Extension Service, Kansas State University, Manhattan, Kansas, 1958 and 1959, p. 3.

Table 1. Change in number of farms by size from 1950 to 1959.¹

	Number in 1950	Number in 1959	Percent of Change
Farms under 10 acres	20	6	-70
10 to 69 acres	50	33	-34
70 to 139 acres	79	42	-47
140 to 219 acres	93	61	-34
220 to 499 acres	235	181	-27
500 to 999 acres	98	96	-20
1000 or more acres	28	36	+29

GEARY COUNTY SITUATION

Geary County is the 2nd smallest county in the State of Kansas, having a land area of 255,360 acres.² Ninety-one and three tenths percent of this acreage is in farms giving us a total of 233,104 acres in farms of which approximately 141,314 acres is pasture and farm steads with the balance of the total acreage giving Geary County 91,790 acres of cropland.³ There are 455 farms in Geary County with the average farm containing 512.3 acres.⁴

Statistics showing the gross value of all field crops per Kansas commercial farm for the four year period 1955-1958 shows Geary County with an

¹1959 United States Census of Agriculture - Preliminary, September 1960, Series AC59-1.

²Jasper R. Pallesen, Kansas Farm Facts, 1959, p. 17-57.

³1959 United States Census of Agriculture - Preliminary, September 1960, Series AC59-1.

⁴Ibid.

average of \$6,380.00.¹ This study shows Geary County ranking 39th in the one hundred five counties of the state, 4th in the Eastern one-half of the state and 1st in the Northeast District of the state. Information contained in Plate 1.

Soil conservation records show that approximately seventy percent of the conservation work in Geary County has been completed.² Since Geary County is the 2nd smallest in the state and ranks 39th in gross value of all field crops in 105 counties of the state it is the opinion of the author that the late adopters in Geary County may be more progressive than late adopters in some other counties of the state.

The Geary County Farm Bureau was organized in 1925 and has employed two county agricultural agents. Mr. Paul B. Gwin served from 1925 until his retirement in October, 1956. The author served from October, 1956 and was employed as the Geary County Agricultural Agent at the time of this study.

Population figures for 1959 show a population of 23,256 for Geary County. There are only two towns in the county. Junction City is the county seat and the main business center for the area; its present population is listed as 19,615. Milford is a small town located near the north border of the county along the Republican River and has a population of 328. The rural area of the county accounts for the 3,313 balance in the county's total population.

A large percentage of the homes in Geary County are modern. Ninety-five

¹Farm Management Study Number N-1357-2, Kansas State University, Manhattan, Kansas. p. 2.

²June 1961, Performance Records, Geary County Soil Conservation District, Junction City, Kansas.

EXPLANATION OF PLATE I

"Gross value of all field crops per Kansas commercial farm"

Farm Management study number N 1357-2.

PLATE I

"THE GROSS VALUE OF ALL FIELD CROPS PER KANSAS COMMERCIAL FARM"

(4 yr. (55-58) ave. total value of crops per county ÷ number of commercial farms per county)

OSAGE	8394	RAWLINS	8448	DECATUR	7538	NORTON	6238	PHILLIPS	4214	SMITH	4007	JEWELL	3828	REPUBLIC	4180	WASHINGTON	4144	MARSHALL	5191	NEMAHA	4787	BROWN	5200	COMPTON	5221
SHERMAN	8734	THOMAS	12,405	SHERMAN	6878	GRAHAM	6896	ROOKS	5843	OSBORN	4700	MITCHELL	5605	CLOUD	4650	CLAY	5017	RILEY	4819	POTTAWATOMIE	4162	JACKSON	4362	JEFFERSON	4325
WALLACE	7564	LOGAN	11,596	BOYD	8272	TREGEA	5746	ELLIS	5401	RUSSELL	6213	LINCOLN	5243	OTTAWA	6902	DICKINSON	5439	WABASH	4975	SWANSEE	5313	DOUGLASS	4718	WYANDOTT	5226
GARDNER	13,822	WICHITA	14,920	SCOTT	14,304	NESS	7482	RUSH	6156	BARTON	6438	ELLSWORTH	5866	SALINE	6624	MCPHERSON	4716	MOORE	4862	LYON	4171	OSAGE	5461	FRANKLIN	4744
HAMILTON	12,597	NEARNEY	15,517	FINNEY	15,892	HOOVERMAN	6826	PAWNEE	8194	STAFFORD	6369	RENO	5649	HARVEY	5888	BUTLER	4823	GREENWOOD	3906	ANDERSON	4697	ANDERSON	4675	LINN	4675
STANTON	21,857	GRANT	22,808	HASKELL	8699	FORD	5622	EDWARDS	7640	PRATT	6638	KIRKMAN	5029	SEDGWICK	6131	WOODSON	3986	NEEDHO	3590	COFFEY	4878	ALLEN	4220	CRANFORD	3958
NORTH	11,397	STEVENS	12,035	SEWARD	9887	CLARK	6227	KOWA	7357	BARBER	6810	HARPER	7474	SLAHER	7153	OWLEY	2918	ELK	3590	WILSON	3970	LABETTE	3817	CHEYENNE	4798
								COMANCHE	6210									CHAUTAUGUA	2632	MONTGOMERY	3588	3320			

N 1357-2

percent have electricity with service being provided by four Rural Electric Cooperatives and the Kansas Power and Light Company. Approximately seventy percent of the homes have piped running water.

SOURCE AND PROCEDURE FOR COLLECTING DATA

The author consulted with Mr. Paul B. Gwin concerning the selection and classification of the adopter groups. From the list of 455 actively engaged farmers in Geary County, 12 farmers who were considered as innovators were selected.

The determination of the size of a sample is one of the most elusive problems facing a researcher. To make the problem even more complicated was the fact that the number of people to be classified as innovators was very limited. A community would probably have only two or three innovators. There were twelve innovators in the county. Due to the small number, we decided to identify all known innovators. Thus, we have the entire universe in this category, but it is treated as a random sample. Persons classified as leading adopters, majority adopters, and late adopters, were selected randomly.

The number of people in the sample was figured by the estimated standard deviation method.

Size of farm (full time farmers) was estimated to be from 150 acres to 3,000 acres. Estimated standard deviation was approximately one-fourth of range, which gave us an estimate of 700 acres. We decided upon a 95 percent confidence range of 380 acres. If the confidence range is to be 380, the confidence limits must be 190 on either side of the sample mean . We use the following relations:

$$\begin{aligned}\bar{X} - M_1 &= 1.96 \hat{\sigma} \bar{X} \\ M_2 - \bar{X} &= 1.96 \hat{\sigma} \bar{X}\end{aligned}$$

If the confidence range is to be 380 acres, the confidence limits must be at a distance of 190 acres on either side of the sample mean \bar{X} .

Substituting the value of 125 in the first equation, we have:

$$190 = 1.96 \hat{\sigma} \bar{X}$$

We estimate the standard error of the mean from our estimate of the standard deviation of the universe:

$$\hat{\sigma} \bar{X} = \frac{\hat{\sigma}}{\sqrt{N}} = \frac{700}{\sqrt{N}}$$

Substituting:

$$190 = 1.96 \times \frac{700}{\sqrt{N}}$$

$$\sqrt{N} = \frac{1.96 \times 700}{190} = 7.2$$

$$N = 49 \text{ (Approximately)}$$

The remaining 37 farmers used in this study were then selected by random sampling and were classified into leading adopters, majority adopters, or late adopters.

Each farmer was then visited and detailed personal interview conducted. The instrument was designed to secure data on age, formal education, farm income, size of farm, tenure status, level of living, sources of informal education, and adoption rate of recommended practices.

COMPARISON OF AGE OF ADOPTER GROUPS

Having selected the twelve farmers who were classified as innovators, the remaining thirty-seven that were selected by random sampling were classified by the author and Gwin according to knowledge of their adoption characteristics. They broke down into fifteen leading adopters, fifteen majority adopters, and seven late adopters. The average age for the forty-eight farmers interviewed was 41 years. One farmer could not be reached for an interview. The youngest farmer interviewed was 25 years of age and the oldest was 80 years

of age.

Table 2 lists and shows the comparison of the ages of farmers in the classified groups.

Table 2. Comparison of age of farmers surveyed by classified groups.

Classified Groups	Number in Group	Years of Age					
		Under 30	30 to 35	36 to 40	41 to 45	46 to 50	50 and over
Innovators	12	1	5	4		1	1
Leading Adopters	15		6	5	2		2
Majority Adopters	15	1	3	5	2	1	3
Late Adopters	6			2	2		2
Total	48	2	14	16	6	2	8

COMPARISON OF AVERAGE AGE

The average age of the twelve farmers in the innovator group was 40 years. The average age of the fifteen farmers in the leading adopter group was 39 years of age and the average age of the fifteen majority adopters was forty-one years. The six late adopters averaged 45 years of age.

Table 3 shows the average age comparison of the four groups.

As was anticipated, the innovator group and leading adopter group were the youngest farmers with the majority adopters being a little older and the late adopters were the oldest group surveyed.

Lionberger¹ found older farmers, on the average, tend to make fewer

¹Herbert F. Lionberger, Adoption of New Ideas and Practices. Iowa State University Press, Ames Iowa. 1960.

Table 3. Comparison of average age of adopter groups.

Classified Groups	Number in Group	Years of Age							
		39	40	41	42	43	44	45	46
Innovators	12	XXXXXXXXXX							
Leading Adopters	15	XXXX							
Majority Adopters	15	XXXXXXXXXXXXXX							
Late Adopters	6	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX							
Total	48								

changes in farming and to be less receptive to change than younger men. The needs of the older farmer are somewhat different than those of younger men. The younger men often have more formal education which may make them more receptive to new ideas. Younger men, characteristically, are more willing to take risks.

COMPARISON OF SCHOOLING

The average (mean) number of years of schooling for the forty-eight farmers interviewed was 12 years. Comparison of the years of schooling of groups is shown in table 4. Four of the 48 farmers received only 8 years of schooling while the remaining 44 received more than 8 years.

A comparison of the average number of years schooling for adopter groups shows the innovators had an average of 14 years of schooling, the leading adopters averaged 13 years, the majority adopters averaged 11 years and the late adopters also averaged 11 years. Thus, the innovators and leading adopters are above the 12 year average for the entire group and the majority adopters and late adopters below the average. Table 5 compares

Table 4. Comparison of years of schooling for farmers by adopter groups.

Classified Groups	Number in Group									
		8	9	10	11	12	13	14	15	16
Innovators	12					6	1	1		4
Leading Adopters	15					10	1	2		2
Majority Adopters	15	2	1	1		10				1
Late Adopters	6	2	1			2				1
Total	48	4	2	1		28	2	3		8

the average number of years of schooling for adopter groups.

Table 5. Comparison of average number of years of schooling for adopter groups.

Classified Groups	Number in Group	Years of Schooling					
		10	11	12	13	14	15
Innovators	12	XXXXXXXXXXXXXXXXXXXXXXX					
Leading Adopters	15	XXXXXXXXXXXXXXXXXXXXXXX					
Majority Adopters	15	XXXXXXXXXX					
Late Adopters	6	XXXXXXXXXX					

The H test was used to determine whether or not the differences in years of schooling between the groups were significant. The H test is a test of the null hypothesis that there are no differences between adopter groups in terms of years of schooling. If H is small we accept the hypothesis that there is no difference between the groups. If H is large we say that there is evidence for differences between the groups. We use the χ^2 table to find

the p value or significance level.

The difference in years of schooling is significant at the .02 level which means that, if the groups were in fact the same, an H value as large or larger than this would occur less than 2 percent of the time. Thus, the hypothesis of differences between groups is supported.

H corrected for ties = 11.39 which is significant at .01 level.

COMPARISON OF TENURE

The tenure of farming for the group ranged from 4 years for the youngest farmer to 60 years for the oldest farmer interviewed. A comparison of the tenure of farming by classified groups is found in table 6.

Table 6. Comparison of tenure of farming by classified groups.

Classified Group	Number in Group	Years engaged in farming							
		5 or Less	6 to 10	11 to 15	16 to 20	21 to 25	26 to 30	31 to 35	36 and over
Innovators	12	1	2	5	2	1			1
Majority Adopters	15	2		2	6	1		3	1
Leading Adopters	6		3	3	3	5	2	1	1
Late Adopters	6			1	1	1	1	1	1
Total	48	3	5	11	14	5	1	5	4

Average number of years of farm tenure for the classified groups was 18 years for the innovators, 18.2 for the leading adopters, 20.5 years for the majority adopters, and 24.5 years for the late adopters. Table 7. shows this comparison of average tenure.

Table 7. Comparison of average tenure for classified adopter groups.

Classified Group	Number in Group	Years engaged in Farming									
		17	18	19	20	21	22	23	24	25	
Innovators	12	XXXXXX									
Leading Adopters	15	XXXXXX									
Majority Adopters	15	XXXXXXXXXXXXXXXX									
Late Adopters	6	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX									

COMPARISON OF SIZE OF FARM

The range of farm size was from 160 acres to 3025 acres. Three farms were less than 220 acres with as many as 12 having 1000 or more. Exactly one-half of the farms were in the 500 to 999 acre range. Table 8 shows the comparison of size of farms operated by the classified groups.

Table 8. Comparison of size of farm operated by classified groups

Classified Group	Number in Group	Under 219	220 to 499	500 to 999	1000 or More
Innovators	12		2	6	4
Leading Adopters	15	2	4	6	3
Majority Adopters	15	1	3	7	4
Late Adopters	6			5	1
Total	48	3	9	24	12

Comparison of average size of farm for each classified group shows that

the innovators farm 1125 acres, while the leading adopters farm 775 acres. The majority adopters farm 840 acres and the late adopters farm only 690 acres.

This confirms other research previously mentioned. The late adopters are older and perhaps do not feel they have the need to farm as much since many of them have raised their family. They seem to be satisfied with their farm operations, and satisfied people do not change much. The reception to new ideas may be directly related to how well they fit the needs of declining years and physical energies.

The average size for the entire group surveyed was 870 acres. This comparison is shown in table 9 of this study.

Table 9. Comparison of average size of farm for each classified group.

Classified Group	Number in Group	Acres in Farm										
		650	700	750	800	850	900	950	1000	1050	1100	1150
Innovators	12	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Leading Adopters	15	XXXXXXXX										
Majority Adopters	15	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Late Adopters	6	XXXXX										

COMPARISON OF INCOME

The average gross income of all farmers surveyed was \$19,863.00. A comparison of the classified groups shows that the innovator group had an average of \$25,016.00, the leading adopters had \$19,937.000, the majority

adopters had \$17,398.00 and the late adopters only \$10,316.00. Table 10 shows a comparison of average gross income for the classified groups.

Table 10. Comparison of average gross income by classified groups.

Classified Group	Number in Group	Gross Income - Dollars			
		10,000	15,000	20,000	25,000
Innoviators	12	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Leading Adopters	15	XXXXXXXXXXXXXXXXXXXX			
Majority Adopters	15	XXXXXXXXXXXXXXXXXXXX			
Late Adopters	6	XXXXXX			

Table 11 gives a comparison of gross farm income and size of farm for all farmers surveyed.

Table 11. Comparison of gross income in regard to farm size for all farmers surveyed.

Size of Farm in Acres	Number in Group	Dollars of Gross Income				
		Under 4999	5,000 to 9,999	10,000 to 19,999	20,000 to 29,999	30,000 to Over
Less than 160	0					
160 to 320		2		5		
321 to 640	13		3	6	4	
641 to 1000	17			6	7	4
1001 to 2000	8			2	4	2
2001 and over	3					3

The average net income of all farmers surveyed was \$4827.00. The innovator group showed an average of \$6,498.00, the leading adopters averaged \$5,265.00, the majority adopters \$4,102.00 and the late adopters dropped to \$2,200.00. A comparison of net income for the groups is shown in table 12.

Table 12. Comparison of average net income by classified groups.

Classified Group	Number in Group	Dollars of Net Income					
		2,000	3,000	4,000	5,000	6,000	7,000
Innovators	12	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX					
Leading Adopters	15	XXXXXXXXXXXXXXXXXXXXXXXXXXXX					
Majority Adopters	15	XXXXXXXXXXXXXXXXXXXX					
Late Adopters	6	XXX					

A comparison of net farm income and size of farm for all farmers surveyed may be found in Table 13.

Table 13. Comparison of net income and size of farm for all farmers surveyed.

Size of Farm in Acres	Number in Group	Dollars of Net Income				
		0 to 1,999	2,000 to 3,999	4,000 to 5,999	6,000 to 7,999	8,000 and Over
Less than 160	0					
160 to 320	7	3	1	2	1	
321 to 640	13	1	4	6	2	
641 to 1000	17	2	4	8	2	1
1001 to 2000	8		1	2	1	3
2001 and over	3	1				3
Total	48	7	10	18	6	7

The differences in net income of the adopter groups were tested for significance. The H test was used to test the null hypothesis that the adopter groups have the same distribution of income. H corrected was 10.115, so there was a significant difference of net income for adopter groups at a confidence level of .02.

COMPARISON OF ADOPTION PRACTICES

As was previously stated the completion of soil conservation practices in Geary County is 70 percent.¹ The type of practices used in this survey were of a general nature which included all types of farms rather than a specific practice that could fit only a dairy farm for example. The group classified as innovators completed 86.4 percent before 1953, the leading adopters completed 83.17 percent, the majority adopters 85.2 percent and the late adopters completed 85 percent before 1953. Compared on the number of years engaged in farming before 1953, the innovators completed at the rate of 7.8 percent per year, the leading adopters completed at the rate of 7.2 percent per year, the majority adopters at the rate of 6.3 percent per year and the late adopters at the rate of 4.2 percent per year. It was very difficult to test for the time practices were adopted. Seven years was not long enough to show the elapse of time of adoption between groups. A study of time longer than seven years is difficult, because farmers do not remember. The innovator group is constantly expanding their acreage and are putting practices on newly acquired land. This is the reason that some of the innovators indicate the late adoption of some of the practices. Table 14 shows the adoption of farm practices by all farmers surveyed.

¹June 1961, Performance Records, Geary County Soil Conservation District, Junction City, Kansas.

Table 14. Year of adoption of farm practices for all farmers surveyed.

Practice	Year Practice was Adopted								
	Before 53	53	54	55	56	57	58	59	60
Ponds	29	2	2	4		2	3	3	3
Record Keeping	43	1		2		1			1
Waterways	40	1	2	1	2	1			1
Diversions	44				1	1			2
Terraces	38		2	1	1	2		1	3
Pasture Management	43			2		2		1	
Cropland Management	42	1	1	3		1			
Use of Recommended Varieties	44	1		1	1	1			
Improvement of Livestock Program	42	1		2		1		2	
Total	363	7	7	16	5	12	3	7	10

COMPARISON OF SOURCE OF INFORMATION

In obtaining the source of information used for adoption of a farm practice, 12 sources were tabulated. When two sources were of equal importance both were listed. The tabulation showed that the most frequently used source of information for all farmers was the County Agricultural Agent. The least important was the commercial dealer. Table 15 shows the tabulation of sources of information for all farmers surveyed.

Lionberger¹ found that Agricultural Agencies (agricultural extension service, etc.) are most used at the evaluation and trial stages. They head the list as sources of information for all adopter groups about the qualities

¹Herbert F. Lionberger op. cit. p. 47.

Table 15. Sources of information used by farmers surveyed.

Sources of Information	Practices									Total
	Ponds	Record Keeping	Waterways	Diversions	Terraces	Pasture Management	Cropland Management	Use of Recommended Varieties	Improvement of Livestock program	
Commercial Dealer								4		4
Reading Farm Journals and Magazines	5	12	5	4	5	15	20	20	14	100
Visits to college and experiment stations	1	6	1	1	1	6	6	7	10	39
County Agent	13	29	11	10	11	21	33	37	31	196
Visiting with Friends and Neighbors	4	2	2	2	2	2	7	3	5	29
Watching someone who tries new things	1	1	1				1	1	3	8
Seeing someone else use it successfully	4	1	5	3	5	3	4	3	4	32
Independent experimentation of his own	5	7	3	2	2	9	5	1	5	39
S.C.S.	14		15	13	17	5	2	1	1	68
Veterans School		1				1	1	1	1	5
F.H.A.						1	1	1	1	4
Other		1								1
Total	47	60	43	35	43	63	80	79	75	526

and use of such complex practices as soil management.

The innovator group used an average of 14 sources of information for each of the nine practices listed and the leading adopters used an average of 19 sources. The majority group also used an average of 19 sources of information for each of the nine practices listed, but the late adopters used an average of only 7 sources of information. Table 16 shows the percentage of sources where the information was obtained.

Table 16. Sources of farm information of adopter groups by percent.

Sources of Information	Adopter Groups			
	Innovators	Leading Adopters	Majority Adopters	Late Adopters
Sources in Percent				
Commercial Dealers	0	1	1	0
Reading	15	15	22	25
Visits to college and experiment station	10	13	9	3
County Agent	51	34	24	47
Visiting with friends and neighbors	2	13	9	2
Watching someone else who tries new things	0	3	1	2
Seeing someone else use it successfully	1	4	10	5
Independent experimentation of his own	3	4	12	3
F.H.A.	2	0	0	0
S.C.S.	9	13	12	13
Veterans School	2	0	0	0
Other	5	0	0	0
Total	100	100	100	100

COMPARISON OF LEISURE TIME

The comparison of leisure time reported by the adopter groups showed that the innovators spent an average of 14 hours per week for leisure time activities. The leading adopters spent an average of 12 hours with the majority adopters showing the most leisure time with an average of 15 hours. The late adopters reported the least amount of leisure time with an average of only 10 hours per week. We are interested in the amount of leisure time, so that educational programs can be planned. The late adopters will adopt new practices but the educational program may need to be designed for them, since they ordinarily do not participate much in formal groups. Table 17 shows the comparison of leisure time reported by the adopter groups.

Table 17. Comparison of average hours of leisure time as reported by the adopter groups.

Classified Groups	Average Hours of Leisure Time Per Week						
	5	10	11	12	13	14	15
Innovators	XXXXXXXXXXXXXXXXXXXXXXXXXXXX						
Leading Adopters	XXXXXXXXXXXXXXXXXXXX						
Majority Adopters	XXXXXXXXXXXXXXXXXXXXXXXXXXXX						
Late Adopters	XXXXXXX						

COMPARISON OF INFORMAL EDUCATION ACTIVITIES

The comparison of the number of books read by adopter groups shows that the innovator group read the greatest number of books. The number read declines with each group, with the late adopters reporting no books read. Each

book was assigned 1 point in calculating the informal educational activities. This value was assigned each book because it was impossible to read and assign values to each one. Table 18 shows the comparison of the number of books read by each of the adopter groups.

Table 18. Comparison of number of books read by adopter groups.

Classified Groups	Average Number of Books Read					
	0	5	10	15	20	25
Innovators	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX					
Leading Adopters	XXXXXXXXXXXXXXXXXXXXXXXXXXXX					
Majority Adopters	XXXXXXXXXX					
Late Adopters	X					

The comparison of the quality of magazines read and the quality of television programs viewed was accomplished by listing most of the magazines and television programs in the area and having two professional educational workers and two non-professionals rate them. The four people worked individually and then the educational values were obtained by tabulation.

The comparison of the quality of magazines read was tabulated by assigning value points to the level of educational value for each magazine. These were totaled and the points were divided by the number of magazines read. The rating for the complete list of the magazines used may be found in the appendix.

The results showed that the leading adopters and the majority adopters rated highest in this classification with the innovators reading at almost the same level and the late adopters reading at the lowest level. The range

was small between the groups with only six tenths of a point between the highest and lowest level. Table 19 shows the comparison of the average level for magazines read by the adopter groups.

Table 19. Comparison of the average rating for magazines read by each adopter group.

Classified Group	Average Points for Magazines Read								
	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3
Innovators	XX								
Leading Adopters	XX								
Majority Adopters	XX								
Late Adopters	XXXXXXXXXXXXXXXX								

The comparison of the quality of television programs viewed was tabulated by assigning value points to the level of educational value for each program. These were totaled and the points were divided by the number of programs viewed. The rating for the complete list of television shows may be found in the appendix.

The results of the tabulation were almost parallel with the results of the value of magazines read with the leading adopters and the majority adopters rating the highest points. The innovators rated at almost the same level and the late adopters again rated the lowest number of points. Table 20 shows the comparison of the average level of television shows viewed by the adopter groups.

The average rating for informal educational activities was computed by adding the average rating for magazines, books, and television shows and dividing the total by 3. The comparison of the average rating for informal

Table 20. Comparison of the average rating for television shows viewed by the adopter groups.

Classified Groups	Rating Points for Television Shows						
	.5	.6	.7	.8	.9	1.0	1.1
Innovators	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Leading Adopters	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Majority Adopters	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Late Adopters	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX

educational activities shows the innovators with 9.7, leading adopters with 6.8, majority adopters with 5.5 and the late adopters with a rating of 1.2. Table 21 shows the comparison of the average rating for informal educational activities for the classified groups.

Table 21. Comparison of the average rating for informal educational activities for the classified groups.

Classified Groups	Rating Points									
	1	2	3	4	5	6	7	8	9	10
Innovators	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Leading Adopters	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Majority Adopters	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Late Adopters	XX									

Observation indicated no significant difference between leading adopters and majority adopters in participation in educational activities. There is obviously, however, a significant difference between innovators and late

adopters.

The overall rating of the innovators is impressively more than that of the other categories which leads us to conclude that innovators are "a breed apart", these data do seem to suggest that the innovator is indeed a more intellectually curious and inquiring person than his fellow-farmers. Of particular significance is the role of reading in the intellectual life of the innovator. This is particularly true of book reading. Although both the leading adopters and majority adopters scored higher than the innovator on the television and magazine scales, the innovator more than made up for this in the area of book reading.

COMPARISON OF SOCIO-ECONOMIC STATUS

Socio-economic status was determined by considering the owner, renter, or manager classification; living facilities; education; size of farm; and income. The following scoring system was used: owner 3 points, renter 2 points, manager 1 point, size of farm 1 point for each 100 acres, living facilities 1 point for each of the five listed conveniences, education 1 point for each year of schooling, income from an operating loss to \$3,000 net income no points, from \$3,001 to \$6,000 2 points, \$6,001 and up 4 points.

Table 22 shows a comparison of the socio-economic status of the adopter groups. The innovator group averaged 34 points, the leading adopters dropped to 30 points, the majority adopters averaged 27 points with the late adopters rating only 20 points.

Table 22. Comparison of Socio-economic status of adopter groups.

Classified Groups	Points for Socio-Economic Status Rating			
	20	25	30	35
Innovators	XX			
Leading Adopters	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Majority Adopters	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Late Adopters	XXXXXXXXXX			

SUMMARY AND CONCLUSION

Data were secured by personal interview from 48 farm operators residing in Geary County, Kansas. Twelve innovators were identified by the retired Geary County Agricultural agent who had served in Geary County for 31 years and the author who has been employed as Geary County Agricultural Agent since 1956. The remaining 36 farmers were selected by random sampling and classified as leading adopters, majority adopters, and late adopters. The innovators are the first to use new practices and the late adopters are the last.

Information was obtained to compare the following: (1) age, (2) formal education, (3) tenure status, (4) size of farm, (5) level of living, (6) farm income, (7) adoption rate of recommended practices, (8) source of informal education.

The following hypothesis was suggested: High scores on an educative activities index will be associated with "innovators;" average scores with "leading adopters;" below average with "majority;" and low scores with "non-adopters."

Other aspects of the study replicated studies done in rural diffusion,

for example, the factors of age, education, size of farm, and social-economic status.

As agriculture becomes more complex and problems of adjustment more acute, it becomes increasingly important to know more about the educational processes which lead people to accept new ideas and adopt them to their individual enterprises. Such information is of particular value to groups which work and deal with farm people. One of the major problems of the Agricultural Extension Service is that their recommendations for improvement of practices are not accepted on many farms when they are needed.

This study tested participation in educative activities as a factor which differentiates those persons who adopt at varying rates and suggests that participation is more characteristic of certain adoption categories than of others.

The comparison of the average age of the adopter groups was 40 years of age for the innovators, 39 years of age for leading adopters, 41 years of age for the majority adopters and 45 years of age for the late adopters. As was anticipated, the innovators and leading adopters were the youngest farmers with the majority adopters being a little older and the late adopters being the oldest group.

The comparison of the years of schooling showed that the innovators and leading adopters were above the 12 year average for the entire group and the majority adopters and the late adopters were below this average.

The average number of years of farm tenure for the classified group was 18 years for the innovators, 18.2 for the leading adopters, 20.5 for the majority adopters and 24.5 years for the late adopters.

The comparison of the average size of farm for each classified group showed that the innovators farmed 1125 acres while the leading adopters

farmed 775 acres. The majority adopters farm 840 acres and the late adopters farm only 690 acres.

The comparison of the average gross income of classified groups showed that the innovators had an average of \$25,016.00, the leading adopters had \$19,937.00, the majority adopters had \$17,898.00 and the late adopters had \$10,816.00.

The comparison of the average net income for the classified groups showed that the innovator group averaged \$6,498.00, the leading adopters averaged \$5,265.00, the majority adopters averaged \$4,102.00 and the late adopters averaged \$2,200.00.

The adoption of farm practices, when compared on the number of years engaged in farming before the majority of the practices were completed, showed that the innovators completed the practices at the rate of 7.8 percent per year, the leading adopters completed at the rate of 7.2 percent, the majority adopters at the rate of 6.3 percent and the late adopters at the rate of 4.2 percent per year.

The comparison of sources of information showed that the innovator group used an average of 14 sources of information for each of the 9 practices surveyed and the leading adopters used an average of 19 sources. The majority adopter group also used an average of 19 sources for each of the 9 practices while the late adopters used an average of only 7 sources of information for each practice.

The level of living or socio-economic status was determined by an index constructed from the following items: owner, renter or manager classification; living facilities; education; size of farm; and income. The innovator group averaged 34 points, the leading adopters dropped to 30 points, the majority group averaged 27 points and the late adopters rated 20 points.

The comparison of the average rating for informal educational activities showed the innovators with 9.7, the leading adopters with 6.8, the majority adopters with 5.5 and the late adopters with a rating of 1.2. Thus, the high scores on the educational activity index were associated with the innovators, the next highest with the leading adopters, below average with majority adopters and the low with the late adopters.

RECOMMENDATIONS

It is the belief of this author that adopter groups can be identified by their educational activities. Other related and additional studies should be made before the educational activity index classification becomes a valid tool in the process of adopter group classification. Of particular interest would be a study designed to investigate the role of the wife in the adoption of recommended practices on the farm. There is some evidence to indicate, from the author's personal experience as county agent, that the wife tends to engage much more intensively in educative activities than does the husband. An index, for example, which gives a combined rating for husband and wives in terms of educative activities might provide some clue as to the importance of the over-all "intellectual atmosphere" of the home.

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APPENDIX

A comparison of gross farm income and size of farm for members of each of the adopter groups is shown in tables 23, 24, 25, and 26.

Table 23. Comparison of gross income and farm size for group classified as innovators.

Size of Farm in Acres	Number in Group	Under 4,999	Dollars of Gross Income			
			5,000 to 9,999	10,000 to 19,999	20,000 to 29,999	30,000 and Over
Less than 160	0					
160 to 320	1			1		
321 to 640	2			1	1	
641 to 1000	5			1	1	3
1001 to 2000	2			1		1
2001 and over	2					2
Total	12			4	2	6

Table 24. Comparison of gross income and farm size for group classified as leading adopters.

Size of Farm in Acres	Number in Group	Under 4,999	Dollars of Gross Income			
			5,000 to 9,999	10,000 to 19,999	20,000 to 29,999	30,000 and Over
Less than 160	0					
160 to 320	3	1		2		
321 to 640	5		1	2	2	
641 to 1000	4			1	3	
1001 to 2000	2				2	
2001 and Over	1					1
Total	15	1	1	5	7	1

Table 25. Comparison of gross income and size of farm for group classified as majority adopters.

Size of Farm in Acres	Number in Group	Dollars of Gross Income				
		Under 4,999	5,000 to 9,999	10,000 to 19,999	20,000 to 29,999	30,000 and Over
Less than 160	0					
160 to 320	3	1		2		
321 to 640	3		1	1	1	
641 to 1000	5			2	2	1
1001 to 2000	4			1	2	1
2001 and over	0					
Total	15	1	1	6	5	2

Table 26. Comparison of gross income and size of farm for group classified as late adopters.

Size of Farm in Acres	Number in Group	Dollars of Gross Income				
		Under 4,999	5,000 to 9,999	10,000 to 19,999	20,000 to 29,999	30,000 and Over
Less than 160	0					
160 to 320	0					
321 to 640	3		1	2		
641 to 1000	3			2	1	
1001 to 2000	0					
2001 and over	0					
Total	6		1	4	1	

A comparison of net farm income and size of farm for members of each of the adopter groups is shown in tables 27, 28, 29, and 30.

Table 27. Comparison of net income and size of farm for group classified as innovators.

Size of farm in acres	Number in Group	0 to 1,999	Dollars of Net Income			
			2,000 3,999	4,000 5,999	6,000 7,999	8,000 and Over
Less than 160	0					
160 to 320	1	1				
321 to 640	2			2		
641 to 1000	5			3	1	1
1001 to 2000	2			1		1
2001 and over	2	1		6	1	4
Total	12	1		6	1	4

Table 28. Comparison of net income and size of farm for members of the leading adopter group.

Size of Farm in Acres	Number in Group	0 to 1,999	Dollars of Net Income			
			2,000 to 3,999	4,000 to 5,999	6,000 to 7,999	8,000 and Over
Less than 160	0					
160 to 320	3	1		2		
321 to 640	5		2	2	1	
641 to 1000	4		1	2	1	
1001 to 2000	2				1	1
2001 and Over	1					1
Total	15	1	3	6	3	2

Table 29. Comparison of net income and size of farm for group classified as majority adopters.

Size of Farm in Acres	Number in Group	Dollars of Net Income				
		0 to 1,999	2,000 to 3,999	4,000 to 5,999	6,000 to 7,999	8,000 and Over
Less than 160	0					
160 to 320	3	1	1		1	
321 to 640	3	1		1	1	
641 to 1000	5		2	3		
1001 to 2000	4	1	1	1		1
2001 and Over	0					
Total	15	3	4	5	2	1

Table 30. Comparison of net income and size of farm for group classified as late adopters.

Size of Farm in Acres	Number in Group	Dollars of Net Income				
		0 to 1,999	2,000 to 3,999	4,000 to 5,999	6,000 to 7,999	8,000 and Over
Less than 160	0					
160 to 320	0					
321 to 640	3		2	1		
641 to 1000	3	2	1			
1001 to 2000	0					
2001 and Over	0					
Total	6	2	3	1		

KANSAS STATE UNIVERSITY

Activities Survey

1. How old are you? _____.

2. What is the highest level of schooling you have reached:

School: 0 1 2 3 4 5 6 7 8 9 10 11 12

College: 1 2 3 4

3. How many years have you been farming? _____.

4. How many acres do you farm? Cropland _____ Grassland _____.

5. Do you own, rent, or manage this farm?

Owner-operator _____ (Acres) _____

Leasor or renter _____ (Acres) _____

Manager _____ (Acres) _____

6. Which of the following facilities do you have?

check

Hot and cold running water in the house _____

Automatic or semi-automatic washer _____

Central heating in home _____

Air conditioner _____

Television _____

7. Do you hold a part-time job during the year? (check)

Custom work _____

Off-farm work _____

8. How is your work distributed throughout the year? Evenly _____ or
unevenly _____? Heaviest in winter _____ spring _____ summer _____
fall _____?

9. About how many hours per week, on the average, would you say that you devote to such free-time activities as hobbies, sports, reading or listening to radio and television? _____ hours.

10. What are the three most important organizations to which you belong?

For example; church, school, farm, fraternal.

(1) _____

(2) _____

(3) _____

11. Here are several farm practices which have been recommended during the past seven years. (Interviewer, go down list with respondent.)

Practices

_____ '53 '54 '55 '56 '57 '58 '59 '60

Ponds _____

Record-keeping _____

(From 7 to 10 appropriate practices will be listed)

12. For each of the practices which the farmer has tried or adopted during the past five year, determine where he got the idea? Check frequency.

From commercial dealers or salesmen _____

From reading journals and farm magazines _____

From visits to experimental station or state university _____

From county agent _____

From talking to friends and neighbors _____

From watching a person who always tries new things _____

From seeing that everyone else seemed to be using it successfully _____

From independent experimentation of his own _____

Other (Specify) _____

13. Are you currently using a practice which is new to your area and is not being used to your knowledge by anyone else in the vicinity?

Yes _____ No _____ If the answer is "yes", ask him to describe in a few sentences what the practice is:

Where did you get the idea for this?

14. Give the page with question number 16 on it to the farmer. Repeat the instructions: Here are 27 magazines. Please indicate how often you read each one by circling the appropriate letter.

"R" for those which you regularly read.

"O" for those which you occasionally read.

"N" for those you never read.

15. Give the farmer the card with question number 18 on it. Repeat the instructions:

Thirty television programs available in your area are listed below. Please indicate how often you view each program by circling the appropriate letter.

"R" is for programs which you regularly view.

"O" is for programs which you occasionally view.

"N" is for programs which you never view.

16. Twenty-seven magazines are listed below. Please indicate how often you read each magazine by circling the appropriate letter.

"R" for those which you regularly read.

"O" for those which you occasionally read.

"N" for those which you never read.

Farm Quarterly	R O N	Astounding Science Fiction	R O N
Art and Culture	R O N	American Living	R O N
Saturday Evening Post	R O N	Harpers	R O N
Newsweek	R O N	House and Garden	R O N
True	R O N	Popular Mechanics	R O N
Argosy	R O N	Kansas Farmer	R O N
Life	R O N	U.S New & World Report	R O N
Field and Stream	R O N	Look	R O N
National Geographic	R O N	The New Republic	R O N
Farm Journal	R O N	True Detective	R O N
The Reporter	R O N	Male	R O N
Consumer Reports	R O N	Saturday Review	R O N
Successful Farming	R O N	Fortune	R O N
Reader's Digest	R O N		

Any other? Please list those which you regularly read:

17. If you had to choose only two magazines of those which you have circled or listed, which two would it be?

(1) _____

(2) _____

18. Thirty television programs available in your area are listed below. Please indicate how often you view each program by circling the appropriate letter.

"R" is for programs which you regularly view.

"O" is for programs which you occasionally view.

"N" is for programs which you never view.

G. E. College Bowl	R O N	Chet Huntley	R O N
Twentieth Century	R O N	People are Funny	R O N
Insight	R O N	Paul Winchell	R O N
Loretta Young	R O N	Candid Camera	R O N
Bachelor Father	R O N	Witness	R O N
Faith for Today	R O N	Camera Three	R O N
Eyewitness to History	R O N	Michael Shayne	R O N
Phil Silvers	R O N	U. S. Steel Hour	R O N
Untouchables	R O N	Face the Nation	R O N
Closeup	R O N	Jack Benny	R O N
Polka Parade	R O N	Meet the Press	R O N
GE Theater	R O N	Dinah Shore	R O N
I Married Joan	R O N	Ed Sullivan	R O N
Continental Classroom	R O N	Checkmate	R O N
Hitchcock	R O N	CBS Reports	R O N

Any others which you regularly view?

Circle any of these television channels which you do not receive:

2 4 5 6 9 13

19. About how many books do you usually read in a year's time? _____

20. Please list the last book you read and check how recently you finished it.

Author and title _____

Determine when he finished the book: Within the last week _____

month _____ over a month ago _____.

21. Are you reading a book at the present time? _____ yes _____ no.

If he answered "yes", list the book or books he is reading, giving the name of the author:

22. Do you belong to a book purchase club, such as the Book of the Month

Club? _____ yes _____ no. If "yes", which one?

23. Give the farmer the card with Question #24 on it. Repeat instructions:

Here's a list of "best sellers." Please indicate whether you plan to read any of them in the future by checking the column to the right of the list.

24. Here is a list of "best sellers." Please indicate whether or no you plan to read any of them in the near future by checking the column to the right of the list.

	YES
Golden, ONLY IN AMERICA	_____
Drury, ADVISE AND CONSENT	_____
Michener, HAWAII	_____
Truman, MR. CITIZEN	_____
Wallace, THE CHAPMAN REPORT	_____
Lee, TO KILL A MOCKINGBIRD	_____
Packard, THE WASTEMAKERS	_____
Cozzens, BY LOVE POSSESSED	_____
O'Hara, FROM THE TERRACE	_____
Jarvis, FOLK MEDICINE	_____
Bersun, THE HOUSE OF INTELLECT	_____
Nabokov, LOLITA	_____
Galbraith, THE LIBERAL HOUR	_____
Yerby, THE FOXES OF HARROW	_____
Goldwater, CONSCIENCE OF A CONSERVATIVE	_____

25. Are you now a member of any discussion or study groups where people meet to exchange ideas: such programs as Great Books, parent education or current affairs? _____ yes _____ no. If "yes", please list the type of discussion program:

If "no", have you ever belonged to such a group in the past five years?

_____ yes _____ no. Which type?

26. Are you presently attending a class or taking a correspondence course?

_____ yes _____ no.

If "yes" please give the title of the course and the name of the school or agency offering it:

27. If meetings were to be arranged on the following subjects, which would you be most likely to attend?

"School reorganization - pro & con"	_____
"Local taxation"	_____
"Local government"	_____
"Recreation needs"	_____
"The effective use of leisure time"	_____
"Educational Opportunities for Adults"	_____
"Rural Health Problems"	_____
"Agricultural Marketing"	_____
"Should Farmers be Unionized?"	_____
"The American College Today"	_____
"The Farmer of Tomorrow"	_____

28. Would your wife be likely to attend any of these? Which ones?

When financial decisions are to be made are these made with your wife?

29. Approximately what is your net farm income? _____

gross income? _____

H Test for Significance

The H test is used to test the hypothesis that several groups of levels (eg. adopter groups) have the same distribution of the quantity you are interested in (for example, age, income, schooling).

If H is small we accept the hypothesis that there is no difference between the groups.

If H is large we say that there is evidence for differences between the groups (as above).

We use the χ^2 table to find the p value or significance level. For example, the first case worked out on net income is significant at the .02 level which means that, if the groups were in fact the same an H value as large or larger than this would occur less than 2 percent of the time; which means that the hypothesis of real differences between groups is supported. A large value of H (larger than the .02 level) would be observed more frequently if there are real differences.

H test¹ for net income.

Ranks		4	12.5	26.5	38.5	45
Income		0-1999	2000-2999	3000-5999	6000-7999	8000 and Over
Innovators	12	1	0	6	1	4
Leading adopters	15	1	3	6	3	2
Majority adopters	15	3	4	5	2	1
Late adopters	6	2	3	1	0	0
Total	48	7	10	18	6	7
		1-7	8-17	18-35	36-41	42-48

8-17

¹Wallis Krushal, One Way Analysis of Variance by Ranks. Nonparametric Statistics by Sidney Siegel, McGraw Hill, 1956.

Summary of ranks for each group.

	R_g	n_g	R_g^2	$\frac{R_g^2}{n_g}$
Innovators	381.5	12	145542.25	12128.52
Leading adopters	406	15	164836.00	10989.07
Majority adopters	316.5	15	100172.25	6678.15
Late adopters	72.0	6	5184.00	864.00
	1176	$= \frac{N(N+1)}{2}$	$= \frac{48(49)}{2}$	$= 1176$

$$H = \frac{12}{N(NH)} \sum \frac{R_g^2}{n_g} \quad \dots 3(N+1)$$

$$H = \frac{12}{\frac{48(49)}{4}} [30659.74] \quad \dots 3(49) = 156.427 - 147 = 9.427$$

As X^2 with $k-1$ degrees of freedom when k is the number of groups $k=4$, 3 degrees of freedom:

Significant at .05 level

Probability of drawing H as large or larger would be less than .05.

The correction divide H by $1 - \frac{\sum T}{N^2}$

$$T_1 = t^2t = 7^27 = 336$$

$$T_2 = 10^310 = 990$$

$$T_3 = 18^218 = 5814$$

$$T_4 = 6^26 = 210$$

$$T_5 = 7^27 = 336$$

$$7686$$

$$1 - \frac{7686}{112896} = 1 - .068 = .932$$

$$H \text{ corrected} = 10.115$$

Significant at .02 level

Table 31. Year of adoption of farm practices for farmers classified as innovators.

Practice	Year Practice was Adopted									
	Before	53	53	54	55	56	57	58	59	60
Ponds		5	1				1	2	2	1
Record Keeping		11			1					
Waterways		11								1
Diversions		10				1				1
Terraces		8			1				1	2
Pasture Management		11			1					
Cropland Management		11			1					
Use of Recommended Varieties		11			1					
Improvement of Livestock Programs		11			1					
Total		89	1		6	1	1	2	3	5

Table 32. Year of adoption of farm practices for farmers classified as leading adopters.

Practice	Year Practice was Adopted									
	Before 53	53	54	55	56	57	58	59	60	
Ponds	9	1	1	1		1			2	
Record Keeping	14								1	
Waterways	11	1	1		1	1				
Diversions	14					1				
Terraces	12		1			2				
Pasture Management	13					1		1		
Cropland Management	14	1								

Table 32. (Concluded)

Practice	Year Practice was Adopted									
	Before 53	53	54	55	56	57	58	59	60	
Use of Recommended Varieties	14	1								
Improvement of Livestock Program	12	1						2		
Total	113	5	3	1	1	6	0	3	3	

Table 33. Year of adoption of farm practices for farmers classified as majority adopters.

Practice	Year Practice was Adopted									
	Before 53	53	54	55	56	57	58	59	60	
Ponds	11		1	1			1	1		
Record Keeping	13			1		1				
Waterways	14				1					
Diversions	14								1	
Terraces	13				1				1	
Pasture Management	13			1		1				
Cropland Management	13			1		1				
Use of Recommended Varieties	13				1	1				
Improvement of Livestock Program	13			1		1				
Total	117	0	1	5	3	5	1	1	2	

Table 34. Year of adoption of farm practices for farmers classified as late adopters.

Practice	Year Practice was Adopted							
	53	53	54	55	56	57	58	59 60
Ponds	4			2				
Record Keeping	5	1						
Waterways	4		1	1				
Diversions	6							
Terraces	5		1					
Pasture Management	6							
Cropland Management	4		1	1				
Use of Recommended Varieties	6							
Improvement of Livestock Program	6							
Total	46	1	3	4				

The innovator-group used an average of 14 sources of information for each of the nine practices listed and the leading adopters used an average of 19 sources. The majority adopter group also used an average of 19 sources of information for each of the nine practices listed but the late adopters used an average of only 7 sources of information. The sources of information used by each adopter group may be found in tables 35, 36, 37, and 38.

Table 35. Sources of information used by group classified as innovators.

Source of Information	Practices										Total
	Ponds	Record Keeping	Waterways	Diversions	Terraces	Pasture Management	Cropland Management	Use of Recommended Varieties	Improvement of Livestock Program		
Commercial Dealers											
Reading Farm Journals and Magazines		1				5	5	4	4		19
Visits to college and experiment stations		1				2	1	3	2		9
County Agent	5	8	5	5	4	8	10	9	9		63
Visiting with Friends and Neighbors								1	1		2
Watching someone who tries new things											
Seeing someone else use it successfully						1	1		1		3
Independent experimentation of his own	1	1	1		1						4
F.H.A.						1	1	1	1		4
S.C.S.	2		2	2	2	3	1	1	1		14
Veterans School		1				1	1	1	1		6
Other											
Total	8	12	8	7	7	21	20	20	20		123

Table 36. Sources of information used by group classified as leading adopters.

Sources of Information	Practices									Total
	Ponds	Record Keeping	Waterways	Diversions	Terraces	Pasture Management	Cropland Management	Use of Recommended Varieties	Improved Livestock Program	
Commercial Dealers								2		2
Reading Farm Journals and Magazines	2	4	2	1	2	2	5	5	4	27
Visits to college and experiment stations		4				1	2	2	5	14
County Agent	4	8	4	3	4	4	10	12	11	60
Visiting with friends and neighbors	1	1	1	1	1		4	1	3	13
Watching someone who tries new things	1	1	1				1		2	6
Seeing someone else use it successfully	1					1	2	2	2	8
Independent experimentation of his own	1	2	1	1		5	1		1	12
F.H.A.										
S.C.S.	7		6	5	7	1	1			27
Veterans School										
Other										
Total	17	20	15	11	14	14	26	24	28	169

Table 37. Sources of information used by farmers classified as majority adopters.

Sources of Information	Practices									
	Ponds	Record Keeping	Waterways	Diversions	Terraces	Pasture Management	Cropland Management	Use of Recommended Varieties	Improvement of Livestock Program	Total
Commercial Dealers								2		2
Reading Farm Journals and Magazines	2	6	2	2	2	5	7	8	5	39
Visits to college and experiment stations	1	1	1	1	1	2	2	2	3	14
County Agent	1	9	1	1	1	7	8	10	6	44
Visiting with Friends and Neighbors	2	1	1	1	1	2	3	1	1	13
Watching someone else who tries new things								1	1	2
Seeing someone else use it successfully	3	1	4	2	4	1	1	1	1	18
Independent experimentation of his own	3	3	1	1	1	3	3	1	4	20
F.H.A.										
S.C.S.	4		5	4	5	1				19
Veteran School										
Other		1								1
Total	16	22	15	12	15	21	24	26	21	172

Table 38. Sources of information used by group classified as late adopters.

Sources of Information	Practices									
	Ponds	Record Keeping	Waterways	Diversions	Terraces	Pasture Management	Cropland Management	Use of Recommended Varieties	Improvement of Livestock Program	Total
Commercial Dealers										
Reading Farm Journals and Magazines	1	1	1	1	1	3	3	3	1	15
Visits to college and experiment stations						1	1			2
County Agent	3	4	1	1	2	2	5	6	5	29
Visiting with Friends and Neighbors	1									1
Watching someone who tries new things										
Seeing someone else use it successfully			1	1	1					3
Independent experiments of his own		1				1	1			3
F.H.A.										
S.C.D.	1		2	2	3					8
Veterans School										
Other										
Total	6	6	5	5	7	7	10	9	6	61

SCORING SYSTEM USED TO DETERMINE SOCIO-ECONOMIC STATUS

- 1 point for each year of formal education
- 1 point for each 100 acres of land operated
- 3 points if owner-operator
- 2 points if renter
- 1 point if manager
- 1 point for each of five listed living conveniences
- 0 points if net income was from a loss up to \$3,000
- 2 points if net income was from \$3,001 to \$6,000
- 4 points if net income was \$6,000 or more

MAGAZINES SCORED FOR INFORMAL EDUCATIONAL ACTIVITIES INDEX

Five Points (High)	Three Points (Medium)	One Point (Low)
Farm Journal	Farm Quarterly	True
National Geographic	Successful Farming	Argosy
The Reporter	Kansas Farmer	Astounding Science Fiction
Harpers	Saturday Evening Post	True Detective
The New Republic	Reader's Digest	Male
Fortune	Newsweek	
Saturday Review	Life	
	Look	
	Field and Stream	
	Consumer Reports	
	House and Garden	
	U.S. News and World Report	
	Popular Mechanics	

Points were totaled and divided by the number of magazines checked to determine the rating.

TELEVISION SHOWS SCORED FOR INFORMAL EDUCATIONAL ACTIVITIES INDEX

Two Points	One Point	No Points
Chet Huntley	G. E. College Bowl	People are Funny
Twentieth Century	Candid Camera	Paul Winchell
Insight	Witness	Loretta Young
Camera Three	Faith for Today	Bachelor Father
Eyewitness to History	Untouchables	Michael Shayne
U. S. Steel Hour	Meet the Press	Phil Silvers
Face the Nation	Ed Sullivan	Jack Benny
Closeup	Checkmate	Polka Parade
GE Theater	Hitchcock	Dinah Shore
Continental Classroom		I Married Joan
CBS Reports		

Points were totaled and divided by the number of television shows checked to determine the rating for the individual farmer.

A STUDY OF INFORMAL EDUCATION AND THE
ADOPTION OF FARM PRACTICES IN
GEARY COUNTY, KANSAS

by

NELSON EDWIN STROUD

B. S., Kansas State University, 1950

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the
requirements for the degree

MASTER OF SCIENCE

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KANSAS STATE UNIVERSITY
Manhattan, Kansas

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This study investigates the relationship between the tendency to adopt recommended farm practices and participation in educative activities. Educative activities refer to magazine reading, books, and television viewing. Studies in rural diffusion have identified four categories of adopters: innovators; early adopters; early majority adopters; and majority adopters (and an additional category: non-adopters). A general association has been established between age, formal education, and socio-economic status and the tendency to adopt early, late, or not at all. One variable which has had little attention is that of participation in educative activities in adulthood.

This study explores participation in educative activities as a factor which may also differentiate those persons who adopt at varying rates and suggests that participation is more characteristic of certain adoption categories than of others.

For the purpose of this study adopters were classified as follows:

(1) innovators, (2) leading adopters, (3) majority adopters, (4) late adopters (in most studies considered as non-adopters). The study suggests that the innovator is most likely to be a person who is curious and inquiring. By definition, he is open to new ideas and is willing to test them in practice. We would expect him, among those studied, to be in the highest rank in terms of participation in educative activities. The following hypothesis is suggested:

high scores on an "educative activities index" will be associated with "innovators;" average scores with "leading adopters;" below average with "majority;" and low scores with "late adopters."

Data were secured by personal interview from 48 farm operators residing in Geary County, Kansas. Information was obtained to compare the following: (1) age, (2) formal education, (3) tenure status, (4) size of farm, (5) level of living, (6) farm income, (7) adoption rate of recommended practices, (8) source of informal education. The first seven items replicate studies done in rural diffusion.

The comparison of the average age of the adopter groups showed 40 years of age for the innovators, 39 years of age for leading adopters, 41 years of age for the majority adopters and 45 years of age for the late adopters. As was anticipated, the innovators and leading adopters were the youngest farmers with the majority adopters being a little older and the late adopters being the oldest group.

The comparison of the years of schooling showed that the innovators and leading adopters were above the 12 year average for the entire group and the majority adopters and the late adopters were below this average.

The average number of years of farm tenure for the classified group was eighteen years for the innovators, 18.2 for the leading adopters, 20.5 for the majority adopters and 24.5 years for the late adopters.

The comparison of the average size of farm for each classified group showed that the innovators farmed 1125 acres while the leading adopters farmed 775 acres. The majority adopters farm 840 acres and the late adopters farm only 690 acres.

The comparison of the average gross income of classified groups showed that the innovators had an average of \$25,016.00, the leading adopters had \$19,937.00, the majority adopters had \$17,898.00 and the late adopters had \$10,816.00.

The comparison of the average net income for the classified groups showed that the innovator group averaged \$6,49 .00, the leading adopters averaged \$5,265.00, the majority adopters averaged \$4,102.00 and the late adopters averaged \$2,200.00.

The adoption of farm practices, when compared on the number of years engaged in farming before the majority of the practices were completed, showed that the innovators completed the practices at the rate of 7.8 percent per year, the leading adopters completed at the rate of 7.2 percent, the majority adopters at the rate of 6.3 percent and the late adopters at the rate of 4.2 percent per year.

The comparison of sources of information showed that the innovator group used an average of 14 sources of information for each of the 9 practices surveyed and the leading adopters used an average of 19 sources. The majority adopter group also used an average of 19 sources for each of the 9 practices while the late adopters used an average of only 7 sources of information for each practice.

The level of living or socio-economic status was determined by an index constructed from the following items: owner, renter or manager classification; living facilities; education; size of farm; and income. The innovator group averaged 34 points, the leading adopters dropped to 30 points, the majority group averaged 27 points and the late adopters rated 20 points.

The comparison of the average rating for informal educational activities showed the innovators with 9.7, the leading adopters with 6.8, the majority adopters with 5.5 and the late adopters with a rating of 1.2. Thus, the high scores on the educational activity index were associated with the innovators, the next highest with the leading adopters, below average with majority adopters and the low with the late adopters.

Observation indicated no significant difference between leading adopters and majority adopters in participating in educational activities. There is obviously, however, a significant difference between innovators and late adopters.

The overall rating of the innovators is impressively more than that of the other categories which leads us to conclude that innovators are "a breed apart". While we cannot claim to have discovered the "dynamics of innovation", these data seem to suggest that the innovator is indeed an intellectually curious and inquiring person. Of particular significance is the role of reading in the intellectual life of the innovator. This is particularly true of book reading. Although both the leading adopters and majority adopters scored higher than the innovator on the television and magazine scales, the innovator more than made up for this in the area of book reading.