

Educational Methods Used And Subject Matter Areas Delivered By Extension Agents In South Karnataka, India

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The primary purpose of this study was to determine the frequency of use of educational methods and subject matter delivered by Extension agents in South Karnataka, India. In addition, the appropriateness of methods used and importance of subject matter delivered was also determined. This study utilized descriptive survey research using all 30 Extension agents employed by the University of Agricultural Sciences, Bangalore, India. A response rate of 83 percent was achieved for the study.

The findings indicated that agents used a variety of educational methods to educate farmers. Notable among them were discussion meetings, field visits, farm and home visits, whole farm demonstration, and method demonstration. Crop production, vegetable production, new crop varieties, soil fertility, crop pests, and diseases, etc. were the subject matter areas that agents delivered most often. Agents agreed that the methods used by them were most appropriate to educate farmers. Further, the subject matter delivered by agents were what they considered most important.

Educational methods are the devices which provide situations conducive for effective learning. Extension agents need high caliber skills in using a variety of educational methods to effectively transfer emerg-

ing technologies to farmers. Selection of appropriate educational methods and their suitability to the subject matter being taught are critically important in transferring new technologies to farmers. Further, the

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choice and use of different educational methods, however, depends upon several factors, such as: the educational level of learners, size of the audience, subject matter taught, skills of Extension workers, availability of teaching aids, and suitability of the methods to the subject matter taught.

Related Literature

A host of researchers have documented the importance of educational methods used by Extension agents to educate farmers. Channegowda (1985) stated that a lack of knowledge and skills relative to the effective use of methods and communications might lead to the following problems: "(1) benefits of new technologies do not reach as many people as quickly as possible, (2) several new technologies will not be accepted by the people when the information is not presented to the people effectively by the Extension workers and (3) the people may not derive the full benefits associated with new technologies (p. 5)."

Siddaramalah and Jalihal (1985) indicated that the important educational methods employed by Extension workers to educate farmers were farm and home visits, office calls, group meetings, method demonstrations, and leaflets. Further, they indicated that basic methods such as the result demonstration and field trips were conspicuously absent. Nataraju and Channegowda (1987) examined the educational methods used by dairy farmers in the Karnataka state of South India. Farm and home visits, cattle rallies, radio, and newspapers were the most frequently used methods to educate dairy farmers. Cherry (1987) stated that the most useful visual method of transferring technology is by demonstrating the technology, preferably

in situations that are seen to be real and representative. He further suggested that farmers' own fields are the ideal place for such activities.

Other researchers have documented the influence of a combination of educational methods on the learning behavior of farmers. Desai (1981) conducted an experimental study to determine the influence of educational methods on learning behavior of potato growing farmers. His findings indicated that a combination of radio, group discussion, and a method demonstration was significantly better than radio alone or radio plus group discussion. Similar findings were reported by Bhat (1980) and Munegowda (1978) for wheat and ragi growing farmers respectively.

In the United States, Bouare and Bowen (1990) found that office calls, bulletins, and newsletters were the methods used most often by Ohio Extension agents to deliver instruction to farmers. Methods used least were radio, television, magazines, and teleconferencing. Richardson (1989) also found that North Carolina farmers very often used newsletters, meetings, farm visits, telephone calls, and on-farm tests.

Purpose and Objectives

Extension agents in India use both formal and informal approaches to educate farmers. However, limited research is available relative to 1) the frequency and appropriateness of educational methods used by Extension agents, and 2) the frequency of use and importance of subject matter taught to educate farmers. Thus, this study was designed with the following four objectives:

1. To determine the frequency of use and appropriateness of educational methods used by Extension agents to educate farmers.

2. To determine if the educational methods that Extension agents use with the farmers are the methods that the agents perceive to be most appropriate.
3. To determine the frequency of deliverance and importance of subject matter areas being delivered to farmers by Extension agents.
4. To determine if the subject matter areas the Extension agents deliver to farmers are the areas the agents perceive to be most important.

Methods and Procedures

This study utilized descriptive survey research methodology. The population for the study was a census consisting of all 30 Extension agents employed by the University of Agricultural Sciences (UAS), Bangalore. The frame was obtained from the Administrative Office, UAS, Bangalore, India.

The researchers developed a questionnaire to collect data for the study. The questionnaire had three sections: (1) frequency of use and appropriateness of educational methods used by Extension agents, (2) frequency of deliverance and importance of subject matter taught by Extension agents, and (3) demographic characteristics such as age, gender, educational level, experience, income, and previous training. The items on the questionnaire for the first two sections were measured on a five-point, Likert type scale.

Questionnaire face and content validities were established using a panel of experts comprised of two faculty members in the Department of Agricultural and Extension Education at The Pennsylvania State University and one faculty member in the Department of Agricultural Extension, UAS, Bangalore, India.

Data were collected through mail survey. After six weeks, 25 Extension agents responded yielding a return rate of 83 percent. Using data collected for the study, a "post hoc" Cronbach's alpha reliability coefficient of .90 was obtained for the first section of the questionnaire. The second section of the questionnaire also had good reliability (Cronbach's alpha=.94). Data were analyzed using descriptive statistics and non-parametric statistical procedures.

Findings

Demographic Profile of Extension Agents. The average age of responding agents was 38 years, with the youngest being 28 years and the oldest 56 years. All of the agents who responded were males. Seventy-two percent of the agents reported the bachelor of science degree as their highest educational level. Only 16 percent indicated that their highest degree was the master's. As expected the major area of study for most of the agents was agriculture (56 percent), followed by horticulture (24 percent), fishery science (12 percent), and others (8 percent). On the average, the agents had 11 years experience, with a low of four years and a high of 23 years. A majority of the agents (88 percent) reported salary earnings of over 30,000 rupees per year. An almost equal number of agents had either training or no training in methods.

Frequency and Appropriateness of Educational Methods Used by Extension Agents (Objectives 1&2). The agents were asked to indicate on a five-point, Likert type scale, the frequency of use of various educational methods to educate farmers. Extension agents used discussion meetings, field visits, farm and home visits, whole farm demonstrations, method demonstra-

tions, result demonstrations, and visits by specialists very often. Methods used least were radio talks, slide shows, and feature articles (Table 1).

The agents were asked to indicate on a five-point, Likert type scale, the appropriateness of educational methods they used to educate farmers. Discussion meetings, whole farm demonstrations, method demonstrations, field visits, field days, farm and home visits, visit of specialists, and result demonstrations were the methods agents perceived to be most appropriate to use with farmers. The least appropriate method was radio talks (Table 1).

To determine if the agents used educational methods they perceived to be most appropriate, the frequency of use and appropriateness rankings were compared (Table 1). Four discrepancies occurred: field days ranked 10th in use and 5th in appropriateness; whole-farm demonstrations 4th in use and 1st in

appropriateness; farm and home visits 3rd in use and 6th in appropriateness, and leaflets 11th in use and 14th in appropriateness. However, when all 15 educational methods were compared as groups, the frequency of use and appropriateness rankings were in high agreement (Spearman $\rho = .87$).

Frequency and Importance of Subject Matter Delivered by Extension Agents (Objectives 3&4)

The agents were asked to indicate the frequency of various subject matter delivered during the year 1989-90. Crop production, vegetable production, crop pests and diseases, fertilizer application, new crop varieties, coconut plantation, and fruit production were the subject matter areas most frequently delivered by agents to educate farmers. The subject matter areas seldom delivered were raising pigs, planting and caring for flower gardens, agricultural credit, and sheep raising (Table 2).

Table 1: Frequency and Appropriateness of Educational Methods Used by Extension Agents.

Educational Methods	Frequency of Use*			Appropriateness**		
	Mean	SD	Rank	Mean	SD	Rank
Discussion meetings	4.56	.51	1	4.20	.87	1
Field Visits	4.40	.50	2	3.88	.88	4
Farm & Home Visits	4.37	.58	3	3.83	.92	6
Whole Farm Demonstration	4.32	.80	4	4.20	1.08	1
Method Demonstration	3.76	.72	5	3.92	.83	3
Result Demonstration	3.64	.91	6	3.64	.95	8
Visit by Specialists	3.60	.87	7	3.72	1.10	7
Farmer's Training	3.44	.77	8	3.58	1.10	9
Night Meetings	3.40	.91	9	3.44	.96	10
Field Days	3.28	1.10	10	3.84	1.11	5
Leaflets	3.16	0.94	11	2.88	1.04	14
Others	2.85	1.57	12	3.00	1.73	13
Writing Feature Article	2.52	1.19	13	3.28	1.13	11
Slide Shows	2.40	1.04	14	3.12	1.20	12
Radio Talks	2.24	1.12	15	2.45	.98	15

*Frequency of Use Scale: 1= Never to 5= Always.

**Appropriateness Scale: 1= Not Appropriate to 5= Extremely Appropriate. (Spearman $\rho = .87$, $n = 15$, $p < .05$ for agreement between use and appropriateness rankings).

The agents were asked to indicate which of the subject matter areas they perceived to be the most important during the year 1989-90 (Table 2). Vegetable production, crop production, new crop varieties, soil fertility, crop pests and diseases, fertilizer application, coconut plantation, farm planning and records, sericulture, and fruit production were the subject matter areas perceived as most important by the Extension agents. The subject matter areas perceived as least important were raising pigs, planting and caring for flower gardens, and raising sheep.

To determine if the agents delivered the subject matter areas they perceived to be most important, the frequency of delivery and importance rankings were compared (Table 2). Five discrepancies occurred: fish farming 11th in use and 17th in importance; poultry farming 13th in use and 20th in importance; foodgrain storage 19th in use and 13th in importance, and marketing of produce 20th in use and 14th in importance. However, when all the 25 subject matter areas were compared as groups, the frequency of use and importance rankings were

Table 2: Frequency and Importance of Subject Matter Delivered by Extension Agents.

Subject Matter	Frequency of Delivery in 1989-90*			Importance**		
	Mean	SD	Rank	Mean	SD	Rank
Vegetable Production	4.52	.65	1	4.04	.98	2
Crop Production	4.40	.82	2	4.12	.57	1
Crop Pests and Diseases	4.32	.99	3	3.92	.95	4
Fertilizer Application	4.30	.63	4	3.87	.76	6
New Crop Varieties	4.24	.72	5	3.96	.89	3
Coconut Plantation	3.84	1.07	6	3.80	.87	7
Fruit Production	3.56	1.00	7	3.67	1.01	10
Soil Fertility	3.48	1.00	8	3.92	1.00	4
Farm Planning & Records	3.48	1.29	8	3.76	1.13	8
Dairy Farming	3.44	1.12	10	3.48	.96	11
Fish Farming	3.36	1.25	11	3.30	1.06	17
Social Forestry	3.32	1.21	12	3.36	1.15	14
Youth Development	3.28	1.34	13	3.44	1.16	12
Sericulture	3.28	1.29	13	3.68	.99	9
Poultry Farming	3.28	1.06	13	3.16	1.02	20
Others	3.25	1.71	16	3.25	2.06	19
Government Programs	3.08	1.11	17	3.12	1.12	21
Food and Nutrition	3.04	1.17	18	3.32	1.11	16
Foodgrain Storage	2.92	1.25	19	3.37	1.24	13
Marketing of Produce	2.84	1.24	20	3.36	1.15	14
Energy Conservation	2.80	1.26	21	3.28	1.27	18
Sheep Rearing	2.60	1.08	22	2.72	1.10	23
Agricultural Credit	2.56	1.12	23	3.12	1.31	21
Flower Garden	2.54	1.04	24	2.67	1.01	24
Rearing Pigs	2.24	1.12	25	2.46	.93	25

*Frequency of Delivery Scale: 1= Never to 5= Always.

**Importance Scale: 1= Not Important to 5= Extremely Important.

(Spearman rho=.90, n=25, p < .01 for agreement between subject matter delivery and importance rankings).

in high agreement (Spearman $\rho = .90$).

Discussion and Conclusion

Extension agents used a variety of educational methods to educate farmers. Prominent among the methods were discussion meetings, field visits, farm and home visits, whole-farm demonstrations, and method demonstrations. From an instructional standpoint, the agents have used almost all methods. However, it appears that the methods used most often tend to be individual methods followed by group methods. Further, it seems that agents are not frequently using result demonstrations. This finding closely matches the findings of Siddaramatah and Jalihal (1985). The agents agreed that the methods they used are appropriate to educate farmers. Bouare and Bowen (1990) reported similar findings for Ohio Extension agents.

Extension agents frequently delivered subject matter areas such as crop production, vegetable production, new crop varieties, soil fertility, crop pests and diseases, fertilizer application, coconut plantation, and farm planning and records during the year 1989-90. From a subject matter standpoint, it appears that agents frequently delivered instruction relative to crop production and related fields. In addition, it can also be concluded that agents do not frequently discuss subject matter areas relative to non-agricultural aspects such as dairy, poultry, raising pigs, and sheep, etc. Perhaps, this may be due to the predominance of agriculture in the state. Further, the subject matter areas delivered by agents during 1989-90 were what they considered most important. This finding does not follow the findings of Bouare and Bowen (1990), who reported that the subject matter

areas delivered by Ohio Extension agents were not what they (agents) deemed most important.

Recommendations

The findings and conclusions provided a basis for the following recommendations.

1. Extension agents should be trained and encouraged to frequently use result demonstrations in delivering educational programs for farmers.
2. The findings of this study should be shared with Extension agents so that they understand, select, and use effective educational methods in educating farmers.
3. Faculty teaching communications courses should use the findings of this study in developing instructional materials for methods/communications courses.
4. Training personnel at the University of Agricultural Sciences should incorporate the findings of this study in designing inservice training programs for Extension agents.
5. Additional research should be conducted to develop a scheme of educational methods considering factors such as the educational level of farmers, size of the audience, subject matter taught, and availability of teaching aids and equipment.

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