

Result Demonstrations and Education

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involves a whole complex of interactions**

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THE POPULAR beginning of result demonstrations as a means of teaching farmers new and improved practices was in 1903 when Seaman A. Knapp conducted his famous boll weevil demonstrations near Terrell, Texas.¹ The success of such demonstrations helped to spark the founding of the Cooperative Extension Service. The Smith-Lever Act of 1914 states, in part, that “. . . cooperative agricultural extension work shall consist of the giving of instruction and *practical demonstrations* in agriculture and home economics.”²

Two kinds of demonstrations have been used. (1) In a result demonstration the farmer carries out a new practice under the direction of the agricultural agent (emphasis is on the practical results). (2) In a method demonstration an audience watches a leader carry out a task such as using a new type milking machine or preparing meat for the freezer (emphasis is on “how-to-do” or skills rather than on the final results).

Although indications are that use of the result demonstration has declined, it is still a basic educational technique.³ Its direct use is

¹ Joseph C. Bailey, *Seaman A. Knapp: Schoolmaster of American Agriculture* (New York: Columbia University Press, 1945).

² H. W. Gilbertson and Gladys Gallup, *Result Demonstration Manual for Extension Workers*, United States Department of Agriculture, Federal Extension Service Agricultural Handbook 123 (Washington: U. S. Government Printing Office), p. 4. Italics added.

³ Gladys Gallup, “It’s Still A Basic Tool,” *Extension Service Review*, XXIX (February, 1958), 36.

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seen in the world-wide use of demonstration farms and the Test-Demonstration program conducted by Extension in cooperation with the Tennessee Valley Authority. In many other programs, such as Balanced Farm and Home Planning, demonstration is implied. It is assumed that by working intensively with a few families others will be influenced by their example. Extension people have repeated often that "it is important to give individual help to a few families who will take the lead. These early adopters are, in effect, the leaders who can interest others by telling their success story and showing the results of their management program."⁴

This paper will summarize present knowledge concerning the result demonstration as an educational tool. First, theory behind the use of demonstrations will be examined. Second, attempts to evaluate the effectiveness of demonstrations will be discussed. Third, factors influencing the effectiveness of demonstrations will be explored. The fact that present knowledge does not provide simple, straightforward answers in these areas will be evident. It will also be evident that evaluation of the influence of specific programs and demonstrations is not easy and may require more effective research techniques than have been developed so far.

THEORY BEHIND DEMONSTRATIONS

The basic idea behind the use of demonstrations seems to be very similar to Gabriel de Tarde's theory of the instinct of imitations. According to de Tarde, all new cultural traits originate from one creative individual and are imitated by the crowd. It is simply the personal influence of one human being upon another. Although Extension workers have not expressed any formal recognition of the theory of imitation, it is interesting that the development of the use of demonstrations as a teaching technique by Knapp and others coincided with the period of sociology's greatest interest in de Tarde's theory.⁵ However, the theoretical basis for the diffusion of ideas through demonstrations has not been examined thoroughly.

Rural sociologists investigating the diffusion of farm practices have repeatedly reported that neighbors and friends are among the most universally used sources of information and are probably sought most frequently as sources of additional information about

⁴ Mable Ito, "Seeing Ideas Put to Work," *Extension Service Review*, XXXI (February, 1958), 36.

⁵ Gabriel de Tarde, *The Laws of Imitation* (New York: Henry Holt and Co., 1903); Margaret Vine, "Gabriel de Tarde: Imitation as the Law of Social Life," in *An Introduction to Sociological Theory* (New York: Longmans, Green and Co., 1959), pp. 105-24; for a summary of theories bearing on the nature of imitative behavior see Neal E. Miller and John Dollard, *Social Learning and Imitation* (New Haven: Yale University Press, 1941), pp. 287-318.

new ideas learned elsewhere. Apparently neighbors and friends are more important during the evaluation and trial stages than as initial sources of information. Further, low income farmers and slow adopters often use other farmers as the first source of knowledge.⁶

Research in mass communications has produced a number of convergent findings. The role of neighbors in the spread of farm practices suggests what has been called the "two steps" or multiple step flow of information. Mass communication sources (such as radio, publication, and various change agencies) have their greatest influence on adoption leaders and during the initial stages of the adoption process. The second and succeeding steps in the flow of information is from the leaders to their neighbors. This is the important source of knowledge for later adopters and for those in the final stages of adoption. The term "trickle down process" has been suggested to describe this flow of information.⁷ It should be emphasized, however, that the sources of information are identified as neighbors and friends—not demonstrators.

EVALUATION OF DEMONSTRATIONS

There is an extensive body of literature concerning the use of demonstrations in farmer education; however, most of it is purely descriptive of the demonstrations. Few have attempted to evaluate result demonstrations as an educational technique in the sense of their influence on the adoption behavior of people other than the demonstrator. For example, in one ten-year period the *Extension Service Review* carried 54 articles concerning demonstrations. These were described and evaluated in terms of what the agent and the cooperator learned. Only seven articles touched on the diffusion of information to neighbors. A study of Farm and Home Development in North Carolina mentions the number of demonstrations carried out by cooperators but evaluation was based on the changes made by member families as contrasted with a control group of non-participating families. The influence of the program on the total agricultural scene is not discussed.⁸

The few research studies that attempt to evaluate the impact of

⁶ For summary of knowledge of adoption behavior and bibliography see Herbert F. Lionberger, "Individual Adoption Behavior: Applications from Diffusion Research—Part I," *Journal of Cooperative Extension*, I (Fall, 1963), 157-66.

⁷ Elihu Katz, "Communications Research and the Image of Society: Convergence of Two Traditions," *The American Journal of Sociology*, LXV (March, 1960), 435-40; Everett M. Rogers, *Social Change in Rural Society* (New York: Appleton-Century-Crofts, Inc., 1960), pp. 328-30 and 418-19.

⁸ C. Paul Marsh, *An Evaluation of the Farm and Home Development Approach to Agricultural Extension Work in North Carolina*, North Carolina Extension Evaluation Series: Number III (Raleigh: North Carolina State College, November, 1962).

demonstrations have produced contradictory results. A nation-wide survey of farmer attitudes towards the use of fertilizer found that most farmers thought that demonstrations were effective in either making others think about fertilizer or in causing them to use it. When farmers were asked for their appraisal of demonstrations in Ohio and Mississippi, most were of the opinion that they were useful sources of information.⁹ The Mississippi survey included 136 farmers living within two miles of demonstration farms. Sixty-five per cent had adopted the demonstrated practice.

At first glance this seems to point to demonstrations as an effective educational technique. Deeper study, however, clouds the issue. In North Carolina, 62 per cent of one group of farmers reported a demonstrator as a source of information about farm practices, but only 18 per cent admitted having talked to a farmer they knew as a demonstrator. In the Mississippi study, although two-thirds had adopted the demonstrated practice, only nine farmers reported having learned about the practice from a demonstration and none of these said that a demonstration influenced them to try the practice.

The indirect or demonstration effect was implied in the use of community development clubs in Mississippi as a media for farmer education. It was assumed that the farmer living in a club community who did not join would be influenced by the examples set by those who did. However, while club members made significant improvement, the non-club members did not adopt any more practices than the farmers in communities without clubs.¹⁰ This seems to question the idea of the trickle-down process.

A word of caution concerning the above findings needs to be inserted. We are not sure of the exact meaning of the answers given by farmers about sources of information. For example, in the study of community development clubs cited¹¹ the contribution of the clubs to the higher adoption rate of club members seemed to be clearly demonstrated by the fact that intensive educational campaigns in the clubs on four practices resulted in 100 per cent adoption. However, when over 100 farmers were interviewed about their

⁹ *A Study of Farmers' Attitudes Toward the Use of Fertilizer: Analytic Report* (Washington: National Plant Food Institute, 1957); Everett M. Rogers and A. Eugene Havens, *The Impact of Demonstrations on Farmers' Attitudes Toward Fertilizer*, Ohio Agricultural Experiment Station Research Bulletin 896 (Wooster: Ohio State University, December, 1961); Kenneth P. Wilkinson and Wilfrid C. Bailey, "Differential Effectiveness of Test-Demonstration Farmers" (unpublished manuscript, Division of Sociology and Rural Life, Mississippi State University, 1962).

¹⁰ Andrew W. Baird and Wilfrid C. Bailey, *Community Development Clubs in Alcorn County, Mississippi*, Mississippi Agricultural Experiment Station Bulletin 597 (State College: Mississippi State University, May, 1960).

¹¹ *Ibid.*

sources of information, only one mentioned the clubs. Several possible interpretations need to be thoroughly investigated before the real effectiveness of demonstrations will be known.

INFLUENCES ON EFFECTIVENESS

A result demonstration is more than planting a test plot for neighbors to see and to copy. It is a whole cluster of things. Factors related to the effectiveness of demonstrations can be divided into four categories: (1) characteristics of demonstrations, (2) characteristics of demonstrators, (3) characteristics of the audience, and (4) characteristics of the community or the total social milieu in which the demonstration takes place.

Characteristics of the Demonstration

Studies have been made of the characteristics of practices that influence their speed of adoption. Five characteristics influencing the acceptance of innovations—relative advantage, compatibility with existing practices, complexity, divisibility into small trial units, and communicability—have been cited as influencing the acceptance of innovations.¹² The problem is the relative effectiveness of different education media in securing the adoption of particular practices.

One of the early studies of Extension methods found that not all subject matter was equally adopted to result demonstrations. Some improvement, orchard fruits, potatoes, cotton, legumes, soils, and fertilizers were better suited than livestock, marketing, foods, nutrition, clothing, and health.¹³ An investigation of the extent to which participants in a program designed to teach farm management practices would transmit their learning to their neighbors concluded that "techniques as complex as studying a farm business and using farm records for doing so will not diffuse from farmer to farmer as have simpler practices such as use of improved seed or high analysis fertilizer."¹⁴

Two criteria of individual practices need to be investigated as influencing the role of demonstrations: (1) the degree to which neighbors are used as a source of information in gaining knowledge of a particular practice, and (2) the extent to which the observing

¹² Everett M. Rogers, *Diffusion of Innovation* (New York: The Free Press of Glencoe, 1962), pp. 121-47.

¹³ M. C. Wilson, *Extension Methods and Their Effectiveness*, United States Department of Agriculture Technical Bulletin 106 (Washington: U. S. Government Printing Office, 1929).

¹⁴ James W. Longest, Frank D. Alexander, and Jean L. Hershall, "The Function of the Neighborhood in the Farm and Home Management Program: A Case Study," *Rural Sociology*, XXVI (June, 1961), 191.

farmers can make visual assessment of the results of using the practice. In a Mississippi county only seven out of 104 farmers gave neighbors as their most helpful source of information on pasture fertilization. Three of these used less than recommended amount and the other four used none. This was after nearly 25 years of pasture demonstrations in that county.¹⁵ This suggests that aspects other than those of the demonstration may be involved.

One whole area that has not been touched upon in any research known to this author is that of the specific techniques used in carrying out demonstrations and utilizing them in educational programs. There are, however, several publications on how to conduct demonstrations—but the real basis for their content seems to be more common sense or subjective than empirical.¹⁶

Characteristics of the Demonstrator

Studies comparing groups of demonstrators and all of their audiences together as a unit have generally shown that the demonstrators ranked higher in leadership roles, use of cosmopolitan sources of new ideas, levels of adoption, and various socio-economic measures.¹⁷ Examination of individual demonstrators and their respective audiences, however, shows that the above generalizations may conceal some important data. In Mississippi, 29 demonstrators were compared with an audience sample living within a two mile radius. As a group, the demonstrators did rate higher than the audience measures of adoption and socio-economic status. But when each demonstrator was examined in terms of his immediate audience, the picture changed. Each demonstrator was rated on the basis of his impact on the farmers living near him. The most effective demonstrators were those who were alike or only slightly better than their neighbors. Those who were markedly higher or lower than their audience usually had a limited impact. This finding is in line with the well known observation that neighboring is usually within the same socio-economic status group.

Characteristics of the Audience

Analysis of the audience influenced by demonstrations corroborates findings concerning demonstrators. The adopters of demon-

¹⁵ Wilfrid C. Bailey and Ellen S. Bryant, *The Use of Fertilizer by Farmers in Alcorn County, Mississippi*, Progress Report in Sociology and Rural Life No. 30 (State College: Mississippi State University, 1962).

¹⁶ H. W. Gilbertson and Gladys Gallup, *op. cit.*

¹⁷ Everett M. Rogers and Frank O. Leuthold, *Demonstrators and the Diffusion of Fertilizer Practices*, Ohio Agricultural Experiment Station Research Bulletin 900 (Wooster: Ohio State University, May, 1962).

strated practices in Mississippi were younger, had more education, higher levels of living, and higher adoption scores for non-demonstrated practices than non-adopters. Adopters were more likely to go beyond friends and neighbors to other sources of farm information. All those who listed bulletins as a primary source of information adopted the demonstrated practice. Ohio farmers who were influenced directly by Extension were also the ones with direct contact.¹⁸

Farmers who are influenced by demonstrations are those most likely to be influenced by other techniques. This leads to the long-standing problem of the extent to which the hard-to-reach farmers are influenced indirectly.

Characteristics of the Community

The flow of information between demonstrations or demonstrators and the audience does not take place in isolation. It must be studied as part of the whole of community activity. Observation of this relationship in Mississippi revealed several factors that need further investigation. The demonstrators were more effective when they and their audience considered themselves to be residents of the same community. Diffusion was slowed down when it had to cross community boundaries. Farmers were also more likely to be influenced by a demonstration if their normal route of travel to town took them past the demonstration.

A common assumption has been that demonstrators should be community leaders. Most Mississippi demonstrators studied were recognized by their audience as farmers, often good farmers, but rarely identified as demonstrators. On the other hand, demonstrators who said that they had been selected to be adoption leaders were less effective than those who listed other reasons or no reason at all. There is need of research on the problem of whether recognition of the demonstrator as a cooperator in a government agency program helps or hinders his effectiveness. Perhaps it is related to the community attitudes toward that agency and its activities.

The final point concerning community factors in the effectiveness of demonstrations is the role of demonstrations in the total program. Studies of demonstrations in Ohio and Mississippi, previously quoted, found that those who adopted demonstrated practices also had contacts with other educational media. In Kentucky the adoption of soil building practices was highest when 100-150

* Everett M. Rogers and Harold R. Capener, *The County Agent and His Concomitants*, Ohio Agricultural Experiment Station Research Bulletin 896 (Wooster: Ohio State University, June, 1960).

demonstrations were conducted annually. They did not necessarily have to be related to soils. Adoption was reduced when a greater or lesser number of demonstrations were conducted. A similar pattern was observed for other educational methods.¹⁹ This could indicate that the effectiveness of demonstrations might be related more to the intensity of the overall educational activity than to any one source of information. The question then becomes, what is the proper mix of techniques for particular messages and different kinds of audiences.

SUMMARY

An attempt has been made in this paper to review what is now known about demonstrations. Discussion included the theoretical basis, attempts at evaluation, and factors influencing effectiveness. Assessments of this sort usually reveal many gaps in our knowledge. Demonstrations have been a traditional educational technique in Extension as they are thought to be an important link in the flow of farming information. Their value has been assumed directly or indirectly in many Extension programs.

Probably the most important fact to be gleaned from this review is that an educational technique is not a single act but involves a whole complex of interactions. An understanding of the interplay of elements in the complex is necessary in order to select an appropriate educational media, utilize it, and evaluate its results.

¹⁹ C. Milton Coughenour and Joseph B. Armstrong, *County Agents' Activity and Farmers' Use of Soil Building Practices*, Kentucky Agricultural Experiment Station Progress Report 130 (Lexington: University of Kentucky, 1963).

TO FACE tomorrow with the thought of using the methods of yesterday is to envision life at a standstill. To keep ahead, each one of us, no matter what our task, must search for new and better methods—for even that which we now do well must be done better tomorrow.

—from JAMES F. BELL as quoted in *Forbes*, XCI
(June 1, 1963), 50.

WE LEARN to do neither by thinking nor by doing; we learn to do by thinking about what we are doing.

—from GEORGE D. STODDARD as quoted in *Forbes*, XCII
(July 1, 1963), 58.