

THE DIFFUSION PROCESS AND ITS IMPLICATIONS  
FOR LEADERS IN VOCATIONAL EDUCATION

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Introduction

Few systems have undergone change in the past few years as rapidly as has the educational system. It seems that the faster change occurs, the more change conscious educators become and the more they try to instigate change within the system. This seems to be an accelerating cycle; the outcome of which is yet to be seen.

Along with this pattern of general change in education, has evolved specific change in the concept of what is a desirable amount or level of education. The college degree is no longer the standard upon which other levels or types of education are judged. Critical shortages of dedicated tradesmen are prevalent in many areas; plumbers, electricians, and auto mechanics are in short supply nation-wide. The concept of "a general education for all" is rapidly becoming less desirable than that of specific education for a chosen occupation.

The Vocational Education Act of 1963, (Public Law 88-210), is reflective of this change in emphasis.

It is the purpose of this Act to authorize Federal grants to States to assist them to maintain, extend and improve existing programs of vocational education, to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational training on a full-time basis, so that persons of all ages in all communities of the State -- those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, and those with special educational handicaps -- will have ready access to vocational training or re-training which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.

The appropriation under this legislation for fiscal year 1968 has just been announced as \$222,859,000.

If one looks closely at vocational education as a whole, it becomes obvious that a gap exists between activities at the national level and activities at the local or school district level. A maze of research has been carried out as a result of the above act, and new programs, innovations,

and theories, which can be recommended for adoption, are emerging. The problem, simply stated, is: How do we get these new developments in vocational education accepted and implemented at the school district level? In the final analysis, is this not a problem of diffusion and adoption similar to that encountered by other institutions attempting to instigate change? To go one step further, how does this problem differ from the one of a teacher interacting with a student attempting to bridge the gap of age and experience to get the student to accept a theorem in plane geometry?

This paper will attempt to provide a frame of reference through which leaders in vocational education at the administrative, supervisory, teacher trainer, and research levels can approach the problem of the diffusion of new programs and developments and their adoption at the school district level.

### The Diffusion Process and Its Probable Relation to Other Learning Theory

The complexity of problems varies directly with the complexity of the society in which the problems originate. Members of early societies could consult one individual who had all the answers; whereas in our society some problem solutions may involve many persons and indeed, some problems remain unsolvable. In a society of diverse disciplines, it seems only logical that it would be expedient to take an inter-disciplinary approach to problem solving. If the problem, as the one posed in this paper, is diffusion, then would it not be expedient to turn to a discipline whose major research emphasis during the last twenty years has been in the general area of diffusion? A particular field or discipline simply cannot afford the luxury of being independent and "turning in upon itself" for solutions to problems.

Using this as a rationale, this paper will outline the diffusion process as conceptualized by rural sociologist, compare it to problem solving as conceptualized by general educators, and draw implications from these for promoting programs of vocational education.

The process of diffusion is defined as the acceptance, over time, of some specific item -- an idea or practice, by individuals, groups or other adopting units, linked to specific channels of communication, to a social structure, and to a given system of values, or culture.<sup>1</sup>

Current research in diffusion can be subsumed under five general headings:<sup>2</sup>

1. The process that individuals go through in the adoption of new practices.

<sup>1</sup>. Herbert Hamilton, Elihu Katz and Martin L. Levin, "Traditions of Research on the Diffusion of Innovations," American Sociological Review, vol. 28, no. 2 (April, 1963), pp. 237-252.

<sup>2</sup>. Joe M. Bolen, "The Adoption and Diffusion of Ideas in Agriculture," Our Changing Rural Society, James H. Copp, ed. (Iowa State University Press, 1964), pp. 265-287.

2. The attributes of new ideas and practices as these affect the rate and extent of adoption.
3. The adoption curve.
4. The personal and social characteristics related to the rate at which individuals adopt new ideas and practices.
5. The differential influence of various sources of information upon adoption as these are related to the stages of adoption and the characteristics of adopters.

It is the contention of the writer that from the work done in these five areas implications can be drawn that will be of value for vocational education leaders striving to implement programs in local school districts. The Ad Hoc Committee appointed by the Rural Sociological Society to report on current research in this area generally supports the writer's views:

The development of empirically supported theories in the diffusion of agricultural technology can make valuable contributions to theories of cultural change in general . . . research in the dissemination of information about farm practices can contribute to theories of communication. This area of study is closely associated with the problem of learning and adult education. If the problems of communication of information about farm practices are stated with reference to existing theory in learning and education, the findings should contribute greatly to our understanding of how people are influenced to acquire new knowledge and techniques.<sup>3</sup>

This acquisition of new knowledge and techniques by the target clientele is the basic goal of vocational education.

The remainder of this paper will be divided into five sections, each outlining one general area of diffusion research and relating it to problems in vocational education.

### I. The Adoption Process

It is now widely accepted that the adoption process includes five rather distinct steps which a person goes through in adopting a new idea or practice. These five steps in adoption are very similar to the five steps in problem solving which are familiar to educators.

Step 1 -- Awareness: This is the stage at which an individual becomes aware of an idea or practice. The parallel step in problem solving would be stating the problem or recognizing that a problem exists.

Step 2 -- Information: This is the stage at which an individual becomes interested in an idea and seeks further information concerning it. In problem solving, this is called analyzing the problem to see how it can be solved.

<sup>3</sup>. Subcommittee on the Diffusion and Adoption of Farm Practices, Rural Sociological Society, Sociological Research on the Diffusion and Adoption of New Farm Practices, (Ky. Agr. Exp. Sta., 1952).

**Step 3 -- Evaluation:** At this stage the individual weighs the alternatives in terms of his own use. In problem solving, alternative solutions are also weighed.

**Step 4 -- Trial:** At this stage the person actually observes the idea or practice in use. In problem solving, the best solution is chosen from among the alternatives.

**Step 5 -- Adoption:** This is the stage at which an individual adopts the innovation. In problem solving this final stage is called solving the problem.

The implication here for leaders in vocational education is to realize that an individual or group of individuals must traverse these steps if a new educational innovation is to be adopted. Recognizing this, an educator can begin to see a pattern of strategy evolve which might be employed to gain acceptance of a new idea or vocational program

## II. Attributes of Innovations As They Affect Adoption

The rate and extent of adoption of an innovation is dependent on several characteristics of the innovation itself. Those practices which are low in initial cost and high in marginal returns will be adopted at a much faster rate than practices which have high initial cost and low marginal returns. This is the factor of relative economic advantage and should be considered of prime importance.

The more complex an idea, the more slowly it tends to be adopted. Complexity can be thought of as lying along a continuum going from practices involving simple changes in material and equipment to those involving changes in the value system of the community. In this respect, and all else being equal, one would expect rapid acceptance of overhead projectors, but slow acceptance of computer based programmed instruction.

Another factor affecting rate of adoption is the visibility of results. Those practices, the results of which may be easily observed, are adopted faster than practices where the results are less visible. A vocational shop program in welding may have high visibility in terms of projects constructed; whereas, a program in land surveying has low visibility of results.

Divisibility is another important consideration. A practice which can be tried on a small, experimental scale will be adopted faster than a practice which must be entirely adopted. Programed instruction in plumbing could be tried on a very small scale; whereas, a course in graphic arts or diesel engine mechanics would require a tremendous outlay of capital just to start a few students in the course.

The compatibility or congruence of the program with existing programs is the final factor to be considered. As an example, a cooperative education program where students are placed in community businesses for on-the-job experience might make a large number of boys unavailable for football or band practice.

### III. The Adoption Curve

The adoption curve takes the shape of the "S" or growth curve as in Figure 1. Adoption progresses slowly at first, then rate of adoption rises rapidly and then tapers off again as the number of adopters nears 100%. This all takes place as a function of time.

The leader should have some idea of how fast a program may be adopted by a particular school district depending on where the program, as a whole, lies along the curve. If 50% of the schools have already adopted the program, he should anticipate little difficulty in getting the target school district to adopt. If, on the other hand, only 5% of the schools in the area have adopted the program, he may anticipate difficulty.

### IV. Personal and Social Characteristics Related to the Rate at Which Individuals Adopt New Ideas and Practices

The difference between individuals in terms of their time of adoption of certain practices has been used to group them into adopter categories. The adoption pattern for individual adopters can be best portrayed by use of the normal curve. See Figure 2. The first 3% under the curve (2 standard deviations above the mean) have been referred to as innovators; the next 13% (from 1 to 2 standard deviations above the mean) as early adopters; the next 34% (from 0 to 1 standard deviations above the mean) as early majority; the next 34% (from 0 to 1 standard deviations below the mean) as laggards.<sup>4</sup>

Various personality characteristics have been identified for these adopter categories such as age, educational level, amount of periodicals subscribed to, and others. Miles has identified characteristics of the innovator among educators:

. . . it has been asserted that strong, benevolent persons often find themselves in an important and central role in utopian change efforts. In addition, intelligence and verbal ability seem important; the innovator also appears to be less bound by local group norms, more individualistic and creative . . . enthusiasm for the innovative enterprise also seems to be important.

Not all of the characteristics of the innovative persons are heroic, apparently; they are said to be rebellious, alienated, excessively idealistic, emotionally unstable, and prone to resentment and rebellion in the face of adversity or disillusionment.<sup>5</sup>

<sup>4</sup>. Daryl Hobbs, "Facilitating the Change Process in Agricultural Education," Paper presented at the Center for Vocational and Technical Education (Columbus, Ohio, August, 1965), pp. 4-5.

<sup>5</sup>. Mathew B. Miles, "Innovation in Education: Some Generalizations," Innovation in Education. M. B. Miles, ed. (Teachers College, Columbia University, 1964), pp. 631-662.

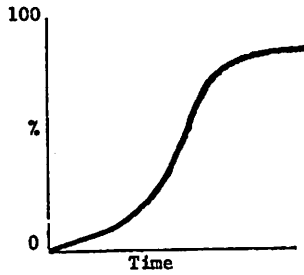


Figure 1

Percent of Adopters as a Function of Time

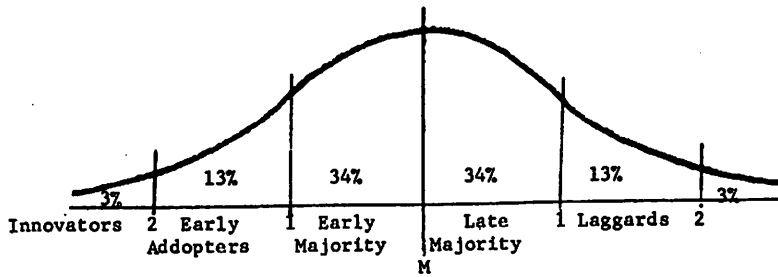


Figure 2

Adopter Categories and the Adoption Pattern

## V. The Differential Influence of Various Sources of Information Upon Adopters at Different Stages in the Adoption Process

The communications aspect of diffusion has two major dimensions. Individuals tend to use different sources of information at the various stages in the adoption process and the various adopter categories tend to use different sources of information at each of the stages in the adoption process.<sup>6</sup>

Three generalizations for the leader in vocational education are posed by Hobbs:<sup>7</sup>

1. Impersonal sources of information are more important than personal sources for relatively earlier adopters of the innovations than for later adopters.
2. Earlier adopters utilize information sources that are in closer contact with the origin of the idea than later adopters.
3. Personal influence from peers is more important for relatively later adopters.

There are strong implications here for leaders. It may well be that how and by whom a school official is approached will predetermine his receptiveness of a new innovation in vocational education. As a point of strategy a leader may work through a neighboring school official rather than approach the target individual directly.

### Conclusion

In any type of promotional activity there is no substitute for tact and good judgment. These qualities coupled with an understanding of diffusion and the adoption process can help insure success in promoting an idea or vocational program.

6. Bolen, p. 281.

7. Hobbs, p. 8.