

Examining New Directions In Media And Channel Selection In The Adoption Process

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Purpose: To expand the diffusion-adoption model to include the educational aspects of adoption and to refine thinking in terms of the channels used by adopters who seek information.

Issues: Questions raised in implementing and studying conservation compliance can help communicators refine the diffusion-adoption process. Past studies overlook the educational channel-media linkage in the adoption process. They also often confuse the terms *media* and *channel*.

Conclusion: Conservation Compliance provides a changed adoption context because adoption is a foregone conclusion for the majority of farmers. That fact offers a remarkable opportunity to study the combined influences of the educational and diffusion-adoption processes.

Introduction and Problem

Questions raised in implementing and studying conservation compliance promise to help communica-

tors refine the diffusion-adoption process. However, these studies overlook the educational channel-media linkage in the adoption pro-

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cess presented here. They also often confuse the terms *media* and *channel*.

During the past decade, studies examining the adoption of conservation tillage generally identify the economic and sociological impact of the new practice on the farmer. Researchers examine issues such as financial incentives (Pampel & van Es, 1977); human capital, farm size, and land tenure (Rahm & Huffman, 1984); market conditions in relationship to diffusion and adoption of conservation tillage (Nowak, 1987; Carlson & Dillman, 1986). They conduct studies on farmer behavior and attitudes in relationship to the expected economic utility of conservation methods (Abd Ella, Holberg, & Warren, 1981; Lynne, Shonkwiler, & Rola, 1988).

The primary concern of these studies was to identify patterns for adoption in an attempt to isolate variables useful in the prediction of acceptance and usage of conservation tillage. Each of these studies looked into the process of diffusion and adoption of new innovations — primarily minimum, reduced, or no-tillage conservation methods in row crops. They sought to identify the reasons why people adopt or fail to adopt (Carlson & Dillman, 1986) so government agencies and land-grant universities would know what to do to better encourage adoption. Most concluded several differences exist between the adoption processes of conservation compliance for the public good and of hybrid corn for private gain. Researchers are calling for new approaches to diffusion-adoption studies and to studies regarding ways to target the farmers who cause the most erosion.

The considerations of the channels and media used for diffusing information is limited or non-exis-

tent. Researchers often recognize communication sources and channels as having some impact or function (Abd Ella, Holberg, & Warren, 1981). Unfortunately, they do not pursue the questions they raise. In the review of literature, it is clear that several authors are using the term *media* to represent channels as well as what would be delivered by the channel, and, at times, even the receiver. The resulting confusion is demonstrated by Budd and Ruben (1979) when they attempted to define media. They say, "By the term *media*, we should be referring to — all of the devices, technologies, etc. — utilized for acquiring, storing, transporting or displaying messages (i.e., codified data)" (p.58). This concept of media is too pervasive for adoption and educational research purposes.

Adoption/Education Channel Perspective. Conservation compliance provides an opportunity to study and reduce the confusion about the use of media and channels in the learning/adoption process. Farmers must learn how to plan for compliance, and learn to implement and update their plan to remain in compliance. Discussing the communication process involved in learning and adoption is problematic for researchers because the terms used to define the process often are ambiguous.

An example of the confusion of language usage at issue here would be the popular use of *mass media*. Here, media is used to represent the delivery system or channel. The words *delivery system* or *channel* would be better choices because they are more descriptive of what is actually taking place. Clarity in research discussions would be better served by reserving the term *media* to represent all those things used to carry a message through a delivery channel.

Mass is not an appropriate modifier for media or channel. In this case, *mass* speaks to the size of the audience for the media or channel. For example, television is often referred to as a mass medium. While television audiences are often counted in the millions and often represented as a mass of people, what is really taking place is a large number of small audiences of one or more family members and friends viewing a given program. Simply counting all these small audiences and adding them together for statistical purposes does not constitute a mass audience. It is not the size of the audience that is unique to the television experience but the simultaneity of the channel, allowing a large number of persons to be exposed to the same message at essentially the same time. How each experiences that message remains an individual or small-group experience.

Furthermore, in communication and dissemination of information research, the term *mass media* has been used as if it represented a discrete delivery system rather than a whole category of possible information delivery channels through which messages using a variety of media are delivered. Lionberger and Gwin (1991) indicate the problem and point to a major concern.

...The mass communication channels are used to communicate with people not seen and generally not personally known. Messages generated by individuals or teams of individuals may be transmitted via the electronic media [channel]. For this transmission by radio, television, or voice recording, special devices are needed. If the message is in written form, the most likely vehicles for communication are newspapers, magazines, books, and special publications. These are sometimes referred to as the "modern mass media," (emphasis theirs) although,

technically, media consist of such elements as paper, ink, and audio and video signals. "Channel" (emphasis theirs) is the more accurate term for radio, television, or print. This has confused communications researchers and delayed steps to research means for improving the media used within each channel and the methods of using them to improve the channel's impact on change (Lionberger and Gwin, 1982, p.133).

In *Technology Transfer: From Researchers to Users*, Lionberger and Gwin (1991) still call attention to possible confusion of researchers.

As we refer to the mass media we should recognize that "channel" [emphasis theirs] is more technically correct than media. "Media" [emphasis theirs] is plural for medium which is a thing used to make a message — paper, ink, and audio and video signals; "channel" [emphasis theirs] applies better to the way the messages are delivered — radio, television, newspaper, computer (Lionberger and Gwin, 1991, p. 104).

In the name of clarity, it might be a service to retire *mass media* and the confusion this usage has wrought.

Keep in mind that this work is still being developed and we are using these examples as an illustration of the difficult situation authors find themselves in as they report and analyze research in this area. It is our view that this differentiation is not simply "better," but an imperative, if we are to keep the messages we are trying to send, and the channels selected for their delivery, separate for study. Even in the above expression of concern about channel and media separation, the two become mixed by using words commonly used in the United States. For example, Lionberger and Gwin use *print* as a *channel* when it should be a *medium* and the *paper* upon which the print appears should be the *channel*. *Newspaper* is classed as a *chan-*

nel when only *paper* is the channel and the fact that news may or may not be printed on the paper is not at issue in channel considerations. In the case of *newspaper*, it is a type of message word — news — being added to a channel word — paper. It is this mixing in common word usage that confounds research.

Troubled Research Context

The unagreed-upon language and vocabulary that is used by researchers in communication and adoption research to describe their work is not the only troublesome factor. Communications research is clearly in its early stages of development. DeFleur (1982) describes the results of communication research to date. He says,

there is no body of relatively consistent, agreed-upon, and formalized assertions that can truly be called "mass communication theory. . . . There has also been a substantial accumulation of empirical data that illuminates particular communication processes or specific effects. But, as yet, even though we use the phrase "mass communication theory," the field has not been unified by the development of a standard set of concepts, an interrelated body of hypotheses, or an overall explanatory framework. (p. 145).

The observations of DeFleur reflect the healthy frustration of a researcher in a field in which much work remains to be done. Some of that work will be to reach a conceptual and agreed-upon language that will help develop the common basis needed to integrate communications research with education and adoption.

Educators recognize that students learn by receiving information through many channels. The choice of the appropriate channel for instructional purposes is not simple or unimportant to learning. Educators need to take into account an array of

constraints including human factors, financial concerns, tasks analysis, and student capabilities that affect which delivery system is appropriate for instruction.

The ideal selection process matches instructional messages with the delivery system that is appropriate to learners, merging concepts based upon instructional design, communication, and technical capability. By taking an integrative approach, the communicator can better match the prospective adopter's needs with the preferred channel and media attributes. As Wagner and Wishon indicate, "media becomes the means to the end of transmitting meaningful messages from teacher to student." (1987, p. 305). This integrative approach is appropriate to the study of innovation because innovations are assumed to proceed through a social system by broadcast/paper channels and interpersonal communications channels. This concept is used by Lionberger and Gwin (1991) when they examined the role of the change agent in diffusing innovation.

Perception Models for Selecting Instructional Channels and Media

When delivering educational messages, some communicators choose the media and channels that are most available. Others focus on what to teach or how to package the information rather than choosing the channel and media that facilitate learning. Romiszowski (1981) says educators should consider the prospective adopter's characteristics, learning or instructional objectives, and desired feedback.

Wagner and Wishon (1987) perceive *media* as *channel* in education from a systemic perspective. Then *media* becomes the means by which

communicators can more effectively teach. To them the media are part of a structure in "which one can adapt generalized instructional methodology to meet situationally specific constraints" (p. 307). The instructional delivery system must be constructed to use the media, message, and channel most likely to transmit the needed information to the audience within the appropriate context, and in a manner conducive to adoption.

Analyses of media/channel selection models provides a range of components from audience characteristics to instructional settings. The research, development, and implementation of such models should emphasize the activities of the communicator as an educator, the audience as learners and/or adopters, and the channels and the media elements within them are components of a complex instructional system.

The instructional material's attributes should enhance the prospective adopter's learning. The communicator's need for an educational model becomes clear when determining the relevance of the instructional material through research, development, and implementation of what is adopted; and when establishing when, what, and how media, and the most effective delivery channel, are selected. How successful the communicator is in selecting the best media and delivery channel depends upon how well they match the audience's instructional needs. Clearly the effectiveness of the instruction plays an important role in the user's interest in and evaluation of the new material — and, ultimately, adoption.

The Model. One way educators and communicators summarize this process is by developing models. For instance, Schramm made an initial

categorization that is crucial to selectivity by breaking the delivery system into "big" and "little" media. This categorization refers to the amount of user control and the potential for feedback that the selected media channels possess. Using Schramm's terms, *big media* (motion pictures, television, newspapers, and magazines) provide limited, if any, user control. What is generally known as "mass media" are big media channels. If the audience needs to control pacing of material and to receive various forms of feedback, *little media* (video, slides, workbooks, and demonstrations) are more appropriate for instruction. Regardless of whether big or little media are used, the channel must be capable of providing potential adopters with the information they need to achieve the objective — adoption of the new idea. Noneducational factors such as political incentives, prestige considerations or mass appeal play distinct roles in the process as described by Schramm. These internal and external conditions affect the selection of instructional materials, as cognitive and behavioral concepts to be learned, and channel selection for delivering the educational experience (Posner, 1982; Snelbecker, 1983).

The limitations and strengths of media and channels, as they affect instructional objectives, must guide the actual selection process. The communicator must consider the desired objectives, content, audience, resources, and environmental context (climate, constraints) in which adoption takes place. Questions about the sequence and strategies for instruction should be resolved before selecting the media and delivery channels. One model for channel selection can be visualized on two levels, one for the objective analysis of the new practice to be adopted and

another for media and channel selection (see Figure 1). Within each level there are three components — media, channel, and audience.

Level 1: This is the preparatory stage in which learning objectives, tasks, and new practices are analyzed. In evaluating the learner, instructors analyze the objective in terms of learner characteristics, task analysis (what the communicator wants the audience to do as a result of hearing, seeing, and trying out the new practice), and instructional setting. Each of these parts affect the learning task. Whether the objective is better taught via instructional (two-way exchange of information) or informational (one-way exchange) modes affects the acceptability of the task to the learned.

Channel attributes (ability to present sound, visuals, motion, and realism) and practical production problems also affect the learner's ability or willingness to accomplish the task. Instructional and informational objectives guide the instructor's media and channel choices. For example, a teacher could use several media (slides, film, video, and a chalkboard) to reach learners through a video channel. All three components interact to develop the desired learning task. The educational needs of students plus required skills, knowledge, and attitudes affect the learning task. Examining how both sides affect the desired task guides instructional material choice. In teaching farmers about no-tillage corn crops, for example, educators may need to visually show no-till planting rather than relying upon lecture or radio channels, especially if the farmer learns best through demonstrations and hands-on experience.

Level 2: This level incorporates common selection factors found in

many models. In the model, notice the circular pattern that emerges by tracing the factors through big and little media and presentational styles. The effectiveness of the media and channel chosen — in terms of an educational objective, message content, audience needs, and the characteristics of the media themselves — is a primary consideration. Costs and other constraints, such as availability of both the channel and the audience/learner at a specific time, production time limits, and facilities must not be overlooked. The human factors as well as the instructional material interact to affect learning choices. The media factors must be compatible with the channel best suited to enhance learning and ultimately adoption.

Accurate use of the model depends upon the skill and the amount of time the communicator/instructor has for developing learning materials. As these choices are made, instructors should remember that audiences prefer familiar channels, so communicators may have to use them. Selecting the appropriate instructional material depends upon knowing the limitations and advantages of each delivery system. Rather than assume what an audience needs, the communicator/instructor should conduct a needs assessment by gathering objective, research-based data regarding the audience's problems and the levels of their perceived needs.

Basic to the use of the model is a decision about whether the material to be produced will be instructional or informational. The communicator, working as an educational/instructional designer, must be capable of using the data from the needs assessment to guide the translation of information from the subject matter experts into effective

learning experiences. Instructors with a sound foundation in media, channel, and audience analysis plus task analysis will be better able to select instructional material to meet the needs of prospective adopters.

The total model must be employed to develop a successful program. Focusing on just one half of the model will produce a less than desired effect. Focusing upon the channel without equal attention to

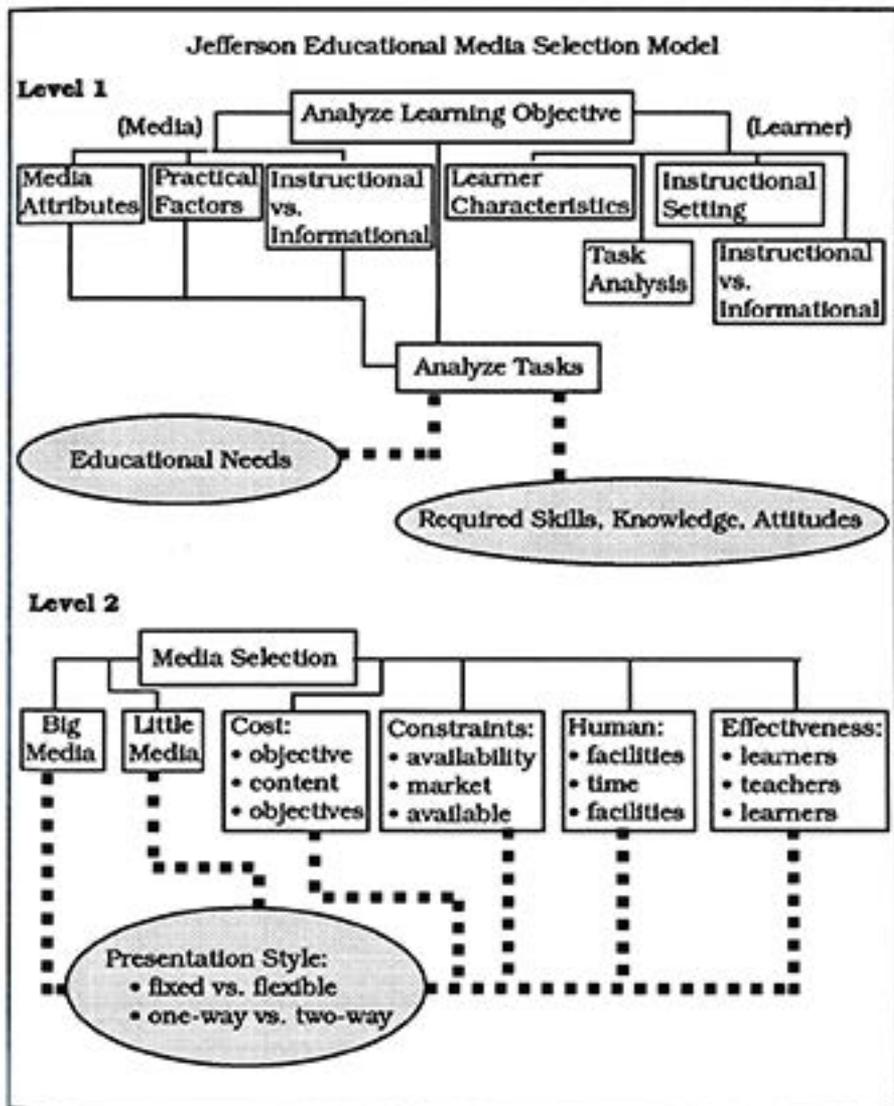


Figure 1: Jefferson Educational Media Selection Model, © 1987

the appropriate media and the educational needs and predispositions of the prospective adopters usually results in weak programs with poor adoption rates.

A Changed Information Context for Conservation Compliance

Bultena and Holberg suggest the 1985 Food & Security Act uses a *power-coercive approach* employing sanctions to obtain compliance and predicted the same approach for the 1990 Farm Bill. Zinn (1990) writes, "Conservation is rapidly being redefined in ways that traditional soil conservationists will recognize less and less." The 1990 provisions, Zinn argues, "make little mention of erosion control while elevating water quality and other environmental topics to the top of the conservation agenda." Together these authors suggest the informational context of farmers has changed in that they are now a part of and committed to a structured, cooperative effort to implement conservation compliance plans. Farmers are now putting in place elements of plans they developed with the Soil Conservation Service (SCS), Agricultural Stabilization and Conservation Service (ASCS), and other federal, state, and local agencies. Such an approach calls for continued informational support so farmers, as they adopt new practices in their specific farm plans, stay in compliance with the law.

Conservation compliance calls for farmers who produce crops on highly erodible land to have completed conservation plans — a written record for managing the land — by the end of 1989 and to implement those plans by the end of 1994. These conservation plans must be followed so that farmers can remain eligible for USDA program benefits. Although a conservation plan is

voluntary and flexible, it is a starting point for the timely and sequential application of conservation practices and related land management decisions. The 1990 Food, Agriculture, Conservation, and Trade Act¹ expands compliance to include wetlands as well as highly erodible farm land.

Educational Model Appropriate. Clearly the new information context in which farmers find themselves is highly structured and provides many informational and instructional and learning opportunities as farmers come to new terms with the practice of their profession. This situation makes educational modeling, in the classic sense, appropriate, researchable and necessary. **Needs assessment** would be the first step in implementing an educational program.

Adoption Model Appropriate. Because farmers must comply, the adoption process is not only appropriate, but is the only process with utility for farmers. They must plan their adoption of conservation practices and put those practices in place or replan other conservation approaches that will be put in place to remain in compliance. Farmers are highly motivated to plan and adopt conservation practices because it is the key to being eligible for USDA programs, including most agricultural commodity programs. In some cases, successful compliance will keep the family farm in the family.

Adoption research has provided the development of the now familiar adoption model with the steps of awareness, interest, evaluation, trial

¹ E-Mail, USDA-Extension Service, September 17, 1991. Jeffrey A. Zinn, "Conservation in the 1990 Farm Bill: The Revolution Continues." *Journal of Soil and Water Conservation*, (January-February 1991) 46:1, p. 48.

and, finally, adoption, which will serve as a guide for the study of communication and education processes leading to conservation compliance. While farmers must go through this process with their particular plan and farm circumstance,

the groups to which they belong and the social structure of which they are a part are an equally fertile area for study of problem solving and linkages. Lionberger and Gwin's model for problem solving has come to include identification of the problem, a

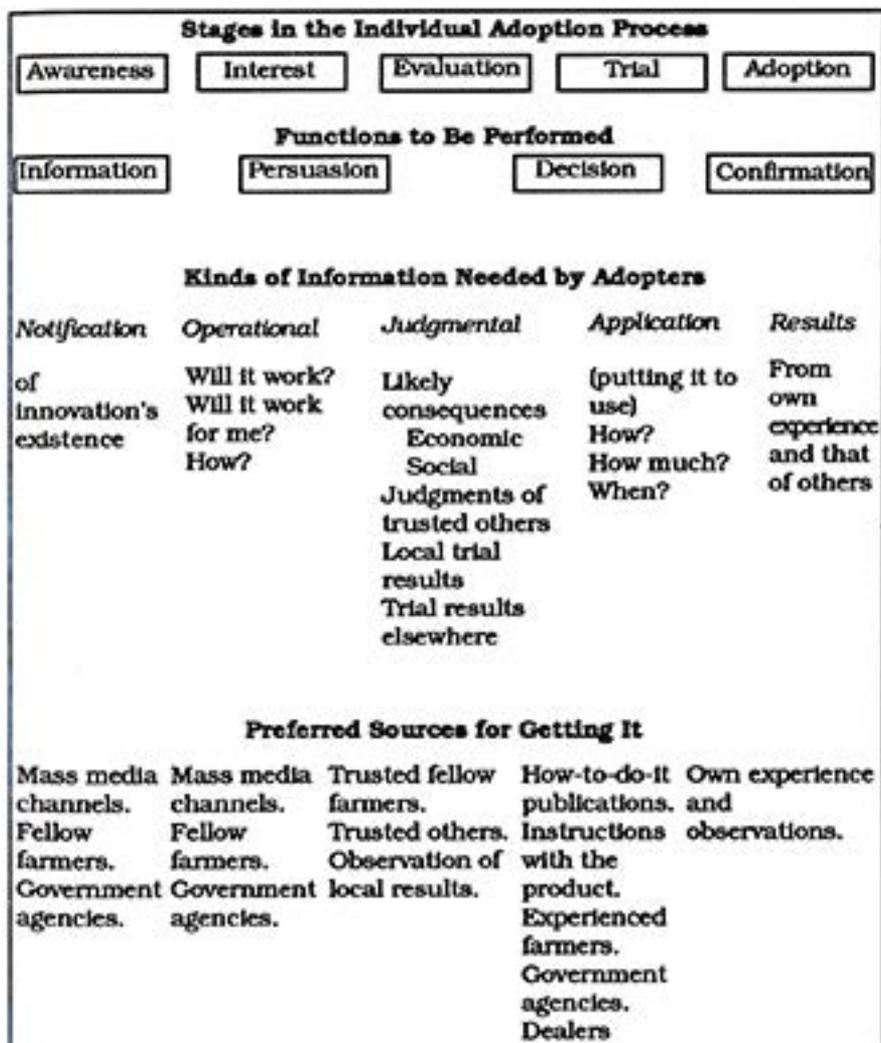


Figure 2: Types of information farmers need when they are at different stages in the adoption process and the sources they generally prefer to go to. From Herbert F. Lionberger and Paul H. Gwin, *Technology Transfer: From Researchers to Users*, Page 50.

search for alternatives, selection of alternatives, trial and adoption.

The success of these adoption processes is dependent upon the effective management of the appropriate learning process as conceptualized by Jefferson's Educational Channel and Media Selection Model.

To verify the usefulness of integrating the educational and communication models with the adoption model, further research is suggested.

Researchable Situation. Conservation compliance provides an opportunity to study adoption and learning in a unique situation. The adoption of a conservation plan and soil-saving practices is a foregone conclusion. What is available for study is the process by which farmers adopt specific conservation practices of value to their farm situation and the educational and informational materials, processes, media, and delivery channels they find useful in implementing their conservation choices.

Communicators and educators interested in studying the communications and teaching processes involved in adoption might consider *focus groups* to help brainstorm ways to reach farmers that would be more effective as well. New informational channels also have been added — satellite teleconferencing, audio teleconferencing, and computer-assisted instruction. Draw noncompilers and private farmers into the focus groups with money and a meal.

Other researchable projects

Channels and Adoption Stages:

Extension and other programs, of course, provide technical field days, workshops, publications, and individual tutoring that focus the learning process. Under the traditional adoption model, subjects move through the stages, drawing infor-

mation and learning from varied sources in a fairly haphazard way. However, tradition says adopters switch from mass channels to interpersonal sources in later stages of adoption. Some current research challenges that assumption, calling for further research.

Affective Aspects: DeFleur (1982) assumes *mass media* [channel] have an effect upon an audience with cognitive, affective [emotional], and behavioral consequences. Depending upon the subject's stage in the adoption process, the effects of the delivery system will be different. So far, the role of affective concerns in the process seems to be understudied. Affective concerns could be met in the teaching stages, when educational approaches could be chosen for their emotional value to learners.

Message Selective: The integration of research findings and the design of educational and informational campaigns is difficult because people tend to be message selective. Based upon their individual differences, they want to hear, see and attend to what they want to hear, see and attend (Feshback & Singer, 1971). DeFleur (1982) describes the behavior of consumers of mass media [broadcast and paper] as selecting messages that are related to their interests, consistent with their attitudes, congruent with their beliefs, and supportive of their values.

Social Relationships: The users of broadcast and paper channels are selective of the messages to which they attend, but they make their decisions in a social context. Lionberger and Gwin (1991) contend that people respond without understanding "their group memberships and how these influence the way they accept and interpret the messages." They continue, "Predictive

capacity is greatly increased when communicators understand these influences. With such knowledge, media consultants can build communications strategy on people's group attachments. Consulting communicators often can help the groups to arrive at decisions based on scientifically researched alternatives (p. 107)."

Channel Selective: People are channel selective in that all have favorite delivery systems in which they want certain types of information delivered. In the adoption process, adopters perceive the use of certain channels as more important than others for specific types of information at various stages of the adoption. For example, Lionberger and Gwin suggests that mass media [broadcast and paper] channels are perceived by adopters as important sources of information at the awareness and interest stages of adoption. If communicators are to keep the language straight in their research efforts, "mass media channels" must not be reported as "sources" when they are simply delivery systems. Clearly the channel cannot be a source.

Channel Selection Perspective

Lionberger and Gwin (1991) stress the importance of interpersonal channels of communication in adoption — even for people with access to all kinds of communication channels because it makes talking and working with each other more enjoyable.

In educational activities interpersonal channels of communication play major roles. "The ideal teaching situation is to have both teacher and learners present, supplied with all the ingredients needed to complete a trial of the thing being taught (Lionberger & Gwin, 1991, p. 119)."

Lionberger and Gwin (1991) are quick to point out that those who

would provide educational materials and act as change agents in the adoption process are few in number and can not do it all alone. Extension workers have been particularly effective in planning educational programs that involve many helpers in the teaching effort. For example, extension workers do this by involve their clients (the farm families) in planning and carrying out educational programs using small and mass audience. [They use mass audience to represent a large number of small, separate, audiences who simultaneously receive essentially the same message at the same time.] Lionberger and Gwin (1991) place the large audience channels in a support role for interpersonal communication channels. Both small and large channels, they say, work together to provide the most effective communication.

Today communicators can choose from many channels to support educational and informational dissemination efforts. The developments in electric channels are especially intriguing as educational institutions look for new ways to be cost and person effective. Lionberger and Gwin (1991) suggest a thoughtful context in which to work. They recommend,

The thing to keep focused on is working with people. How do we involve them in programs that will improve their lives? Some of the new equipment can help us do that. But some of it will get in the way if we let it. For example, it is easy to fall in love with our computers and spend time learning and doing the amazing things they can do when we could be in the field working with people on their problems.

Channels and Technologies of Service

Armed with distinctions between media and channel, communicators can better study the technological

opportunities that today's educators can use to reach their audiences. They range from the common telephone and fiber optics to teletext, videotext, communications satellites — and the microcomputers that often are used to combine these resources into a teaching package.

Conclusion

As with other models, the one proposed here requires multiple levels for a successful outcome. It is both descriptive and prescriptive because it enables the communicator/instructor to describe current conditions then select the appropriate media and delivery channel. The model tells the user how to best select media and channel while describing the process by which educational decisions can be made. This media/channel selection model attempts to consider past limitations of media-oriented, as well as instructional-oriented, models while merging common traits. The usefulness of the model depends upon the level of pre-planning and analysis undertaken by the user. Success requires understanding the limits and benefits of various media, objectives, learners, and teachers. Each of these elements must be integrated for any model to be viable.

To make technical information functionally relevant, researchers must tailor projects to the needs of the farmers. Researchers must learn how farmers locate their information sources and how they come to hold those sources as believable. The media experts, who often translate between the researcher and the learner, must become more skilled in understanding instructional principles and the learning styles of their audiences.

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