Communicating Change to Local Roads Officials

KATHRYN P. MCDERMOTT AND EDWIN W. HAUSER

Providing technical assistance to local roads managers has not been a priority of traditional federal research programs. However, the national network of technology transfer (T^2) centers, which emerged in the 1980s from the FHWA's Rural Technical Assistance Program, are now at the forefront in providing technology transfer to local roads officials. Accordingly, the T^2 centers' primary responsibilities are to (a) identify the needs of local officials, (b) package the appropriate technology for meeting those needs in such a way that it can be easily understood and implemented at the local level, and (c) follow up on locals' use of the new technology to make sure its implementation has been successful. Although these centers have in the past 10 years made great strides in accomplishing the first two stages of this process, they must continue to work hard to find appropriate means for accomplishing the third. T^2 centers must begin to reassess their role as agents of change and ask themselves, How well are we communicating technological change to local roads officials? The only way to determine if the technology transfer program has been successful is to document how locals have used the technology received through these centers to improve their method of operation. A successful technology transfer effort ensures that new technology is both introduced to local officials and implemented practically to solve a problem or satisfy a need. If a climate conducive to change is not created by the technology transfer agent in his relationship with local officials, then change will not occur. T^2 centers need to develop strategies that will help them not only to learn whether or not local officials are making significant use of the information and materials the centers provide but also to determine the costs associated with implementing technological change for the user's benefit.

Low-volume roads are vital to the fabric of the nation's economy. They make up more than 82 percent of the nation's highways; provide access to Interstates and primary roads; and play an integral role for agricultural, manufacturing, and tourism industries. Yet, rural local roads remain among the nation's most hazardous roads and receive the least attention from the federal government, which traditionally allocates funding toward programs designed to improve the nation's Interstate and urban systems.

In the early 1980s, Congress made the first significant move to recognize the transportation needs of rural areas when it established the Rural Technical Assistance Program (RTAP) under FHWA. From this federal program emerged the technology transfer (T^2) program for local transportation agencies. The national network of T^2 centers subsequently created is now at the forefront in introducing to local roads officials the technological resources available for improving the design, construction, and maintenance of low-volume roads. But as time has shown, closing the gap between available research and the practical needs of local roads officials is hardly an easy job for the nation's T^2 centers.

K. P. McDermott, University of North Carolina, Institute for Transportation Research and Education, P.O. Box 17489, Raleigh, N.C. 27619. E. W. Hauser, Center for Advanced Research in Transportation, Arizona State University, Tempe, Ariz. 85287-6306.

COMMUNICATING TECHNOLOGICAL CHANGE

Technology transfer is without question a complicated process whose success is determined by two factors: money and communication. It takes money to conduct the research, harness the professional expertise, and develop the resources necessary to foster technological innovation. With respect to the T^2 centers, the issue of who should provide funding for their program activities is presently under rigorous debate, and will continue to be debated as long as federal funding for these programs is reduced.

However, of equal, if not greater, importance is the second of these two factors, communication, and its role in technology transfer at the local level. With an average budget of over $200,000, and a vast storehouse of technical information at hand, the nation's T^2 centers currently have the means to provide significant training and technical assistance to local governments. Accordingly, T^2 centers must determine to what extent they are willing and able to participate in the entire technology transfer process.

Technology transfer is successful only when technical knowledge has been learned and put to practical use to solve a specific problem (*1*). In other words, technology transfer is a process which must involve change for the common good. After nearly 10 years of operation, most T^2 centers are well skilled at introducing new technology to local users through workshops, demonstrations, newsletters, and other methods. The question now is How successfully are these federally funded T^2 centers communicating technological change to local groups?

NATURE OF LOCAL GOVERNMENT AND THE T^2 CENTER

It has been suggested that the T^2 center and the local groups it serves assume functional roles that at times may pose the greatest impediment to communicating technological change.

After a series of meetings with officials from local municipal and county governments, and after 3 years of operation providing technical assistance, The Center for Local Government Technology at Oklahoma State University (*2*) found that the following characteristics were typical of the nature of local governments overall:

1. Expediency oriented,
2. Autonomy of operation,
3. More services demanded,
4. Tax burden too high,
5. Labor intensive but low pay scales,
6. No tradition of efficiency, and
7. Inadequately trained personnel.

This list suggests that local governments, in short, operate under the "Home Rule Principle." They work in the short term, make their own rules, are primarily responsible for the construction and maintenance of low-volume roads, and therefore neither expect nor particularly appreciate interference from the state or federal government. From a local perspective, federal money inevitably brings federally mandated specifications and regulations that rarely take into account the specific needs of the local agency (*3*).

The T² center, on the other hand, is essentially the agent of change. As an appendage of the federal government, it believes valuable research exists that should be implemented at the local level, not only to standardize construction and maintenance practices, but also to increase safety and cost efficiency in the long term. The T² center sees itself as bearing the fruits of research to local governments that may have neither the money nor the personnel to seek these technological resources on their own.

The above description poses a strictly black and white scenario of the nature of the local agency and the T² center. In truth, local governments are interested in new materials and information that can be used to make their roads safer and more cost-efficient. However, they are not interested in wrestling with federally mandated specifications and requirements that are inappropriate and overly complicated (*3*). The reality of their work environment, as the Oklahoma State University study reveals, will not allow for such red tape. What local governments do want is the flexibility to use and adapt technological resources to meet their own needs. This is where the services that the T² center can provide come into play.

ROLE OF THE T² CENTER AS THE AGENT OF CHANGE

As the agent of change, the T² center acts as middleman between available research at the state and federal levels and the needs of local roads managers. Accordingly, the primary responsibilities of the T² center are to (a) identify the needs of local officials, (b) package the appropriate technology for meeting those needs in such a way that it can be easily understood and implemented, and (c) follow up on locals' use of the new technology to make sure that its implementation is successful (i.e., solves a problem or satisfies an unfulfilled need).

As previously mentioned, the T² centers operating under RTAP are now well familiar with and already making practical use of the techniques available to them for fulfilling these first two responsibilities. Moreover, a generous amount of research exists that has investigated many centers' successes and failures with respect to identifying local needs and packaging technology to meet those needs. NCHRP's recent synthesis on *Technology Transfer in Selected Highway Agencies* (*4*), for example, offers an excellent overview and ranking of the mechanisms currently used by T² centers for transferring technology to local agencies. Of course, with time and growth inevitably comes the temptation to standardize operations for the sake of convenience. There is no question that T² centers must resist the urge to distribute "canned" solutions to local problems on a regular basis. In keeping with its role as an agent of change, the T² center must instead continually challenge itself to seek out new methods and experiment with different strategies for transferring technology to local roads officials.

FOLLOWING UP ON THE IMPLEMENTATION OF NEW TECHNOLOGY

The one responsibility T² centers are not yet fully addressing is following up on locals' use of new technology. Making sure that a new technology is applied effectively once delivered to the user seems virtually an impossible task for the T² centers, which are understaffed yet serving a broad range of users. However, technology transfer, if it is to be fully achieved, does not occur until a new idea or technology has been successfully implemented to the user's benefit. It is essentially the T² center's duty to make sure that the implementation process is sufficiently carried out. As the agent of change, the T² center should engage in activities that ensure that implementation occurs where needed to solve local transportation problems. The following are three suggested tasks that may help the center achieve this goal:

1. Create a climate conducive to technological change,
2. Monitor local efforts to implement new technology, and
3. Promote local success stories concerning the implementation of new technology.

It is the findings obtained from the technology transfer agent's engagement in these three tasks that ultimately determine the success of any technology transfer effort. Before investigating these three tasks further, it may be helpful to first understand how the federal perspective of evaluating technological change differs from the technology transfer center's view. Each view is valuable, and each points to the need for the federal government and the T² center to become partners in solving the problem of program evaluation.

A FEDERAL PERSPECTIVE OF EVALUATING TECHNOLOGICAL CHANGE

From a federal perspective, documenting the dollar savings that result from technological change is a major concern. In a presentation given at the 1990 National RTAP Conference, the executive director of FHWA recognized the difficulty of quantifying the benefits that result through the training provided by the T² centers (*5*). He observed that dollar savings, in particular, obviously exist. Approximately $24 million to date has been saved as a result of the efforts of the nation's T² centers; however, this figure may be just the tip of the iceberg.

At present, the T² centers do not have a standard method of evaluation (MOE) for estimating the dollar savings resulting from its training efforts. Course evaluation forms and annual program evaluation forms provide T² centers with the primary tools they have to evaluate overall program effectiveness. Although these methods keep the centers aware of how receptive locals are to their services, they offer little, if any, quantifiable evidence of dollar savings to the federal government, which provides funding for the centers' activities. In short, the federal government knows that technology transfer programs are saving users' dollars. But they don't know how much. They know that changes are occurring. But they don't know to what extent. According to the worst case scenario, unless MOEs are developed to measure such factors, the federal government runs the risk of spending millions of dollars supporting T² centers that transfer technology that never gets used to its full capacity.

NCHRP's synthesis on *Technology Transfer in Selected Highway Agencies* (*4*) suggests that if quantifiable MOE's are to be developed for the T² centers, they should emerge from research projects initiated by NCHRP or FHWA. These MOEs should quantify the benefits derived from both individual technology transfer and from the technology transfer program themselves. These MOEs may be based on dollar savings or engineering economy analyses but nevertheless should be developed for standard use among the nation's T² centers (*4*). Thus, the federal government would have the information it needs to conduct benefit-cost analyses and justify future funding expenditures for technology transfer program activities.

A T² CENTER PERSPECTIVE OF TECHNOLOGY TRANSFER

However, from the perspective of the T² center, one either believes in the overall value of training or one doesn't. With respect to program evaluation, what the T² centers want or need to know—the bottom line—is not necessarily how many dollars are saved as a result of better training, but whether or not the training they provide is solving the transportation problems that the locals need solved. Developing a formal strategy for evaluating the practical applicability of new technology, like the three-step follow-up strategy previously described, is instrumental in helping T² centers determine whether or not their engagement in the technology transfer process is both comprehensive and successful.

CREATING A CLIMATE CONDUCIVE TO TECHNOLOGICAL CHANGE

Louis B. Stephens, Jr. (of Wilbur Smith Associates), in his article *What Happens When the Consultant Goes Home?* poses four questions that may help the T² center evaluate whether or not the technology transfer effort will yield a significant change resulting in an overall net improvement for the user (*6*). These questions are as follows:

1. Are there recognizable factors within the recipient community that must be present if long-term success of the technology transfer is to be ensured?
2. Are there factors or attitudes that must be present among the donors or providers to ensure long-term impact?
3. Are there recognizable factors that would cause the on-the-scene agent to suspect that a program might fail or have only short-term impact?
4. What type of feedback does the provider require to improve his own experience and how can he ensure receiving such feedback without compromising its value?

These questions imply that the technology transfer agent must continuously develop his or her professional expertise and understand the user's environment and needs to predict the overall success of the technology transfer effort and create a climate conducive to technological change.

North Carolina's T² center, located at The University of North Carolina Institute for Transportation Research and Education, has spent the past year investigating whether or not its efforts have fostered the potential for technological change among local officials. In the past, North Carolina's center, like other centers, has relied chiefly on course evaluation and annual program evaluation forms to obtain feed-

Course Evaluation

First, rate the following:	Circle One (Ten = Highest)									
1. Classroom Instruction	1	2	3	4	5	6	7	8	9	10
2. Course Content	1	2	3	4	5	6	7	8	9	10
3. Training Materials	1	2	3	4	5	6	7	8	9	10
4. Overall Effectiveness	1	2	3	4	5	6	7	8	9	10

In the space below, write your constructive comments for any improvements on any topic area. Please be specific. If you need additional space, please write on the back.

FIGURE 1 Original course evaluation form.

Workshop Title

Workshop Date
ITRE Training Facility, Raleigh, NC

COURSE EVALUATION

Directions: Please rate each course area listed in the box on a scale of 1 to 5 (**5 being the highest**). Then respond to the questions which follow by checking "yes" or "no" and providing additional comments when necessary. Your feedback will enable us to update and enhance this course periodically so that we may better address your needs.

Classroom Instruction	1	2	3	4	5
Course Content	1	2	3	4	5
Training Materials	1	2	3	4	5
Administration (staff performance, registration, check-in, etc.)	1	2	3	4	5
Meeting Facilities (meeting room, acoustics, temperature, etc.)	1	2	3	4	5
Overall Effectiveness	1	2	3	4	5

Classroom Instruction

a) Did the instructor/s/ present information clearly and at an appropriate rate? ____Yes ____ No
b) Did the instructor/s/ effectively communicate the course objective/s/? ____Yes ____ No
c) Did the instructor/s/ respond to participants' questions in a satisfactory manner? ____Yes ____ No
Comments:

Course Content

a) Were the course topics suitable for your background and experience? ____Yes ____ No
b) Which topic/s/ did you find most useful? _____
Least useful? _____

Comments:

Training Materials

Were the training materials a useful supplement to the course instruction? ____Yes ____ No
Comments:

Administration (staff performance, registration, check-in, etc.)

Comments:

Meeting Facilities (meeting room/s/, acoustics, temperature, etc.)

Comments:

Overall Effectiveness

a) Do you feel you can effectively use the information obtained through this course in the workplace? ____Yes ____ No
b) Do you feel this course requires follow-up assistance or additional short courses to help you make practical use of the information presented? ____Yes ____ No
Comments:

Follow-Up

Do you believe that the information received through this course will enable your organization to reduce costs in operations? ____Yes ____ No

Would you be willing to document those savings for us? If so, please give us your name on a separate sheet before you leave.

Thank you for your assistance!

FIGURE 2 New evaluation form.

back from local users; however, because of the nature of the forms, the feedback received was not indicative of whether or not the technology presented through the workshops, newsletters, and other forms of technical assistance could be practically applied. In short, the course evaluation forms explained only how well the local officials were entertained. Once a workshop participant left, he disappeared into a foggy spectrum of "nowhereland," preventing a witnessing of any real use of the technology to which he had been introduced.

In December 1989, North Carolina's T² program took steps to uncover, first of all, whether or not the information being offered was of any practical use to the local groups making use of the center's services. In order to accomplish this goal, the traditional course evaluation form used for the past 3 years was revised. Figure 1 shows a copy of the original course evaluation form, which offered locals virtually no opportunity to communicate whether or not they could realistically apply the information they obtained through the center. The new evaluation form (see Figure 2) allows for an overall rating of specific course areas, but also includes questions that direct locals to respond to how they feel the course contributes to their specific needs. Three questions, in particular, were added to address these concerns:

1. Do you feel you can effectively use the information obtained through this course in the workplace?
2. Do you feel this course requires follow-up assistance or additional short courses to help you make practical use of the information presented?
3. Do you believe that the information received through this course will enable your organization to reduce costs in operations?

From January through October 1990, 23 workshops have been held with 780 participants. Of those participants, 623 completed and turned in the newly revised course evaluation forms. For the purpose of this report, their responses to the three questions were calculated and evaluated. The results obtained and conclusions drawn are provided below.

• Question 1: Do you feel you can effectively use the information obtained through this course in the workplace?

Five hundred ninety-eight (96 percent) of the respondents answered "Yes" to this question; 25 (4 percent) answered "No." Clearly, it can be assumed that the local constituents are obtaining information and materials that they feel they can make practical use of. However, according to a few comments, although the information was useable, nothing could be achieved unless upper management was willing to listen and implement new ideas. This concern, noted by several respondents, suggests a need to investigate to what extent local roads managers are aware of and understand the applicability and usefulness of the information their personnel are bringing back with them. It would also be desirable to understand local roads managers' perceptions of training overall. For example, is a workshop merely an opportunity to describe established knowledge and procedures, or is it an opportunity to promote the implementation of change where change is needed; or is it, perhaps, both, and under what situations? Finally, it would be interesting to investigate what percentage of workshop attendees, or users of the center's services, are local roads decision makers. A clearer perception of the rank and titles of workshop participants may indicate to what extent promoting change is likely. The role of the local roads manager in the technology transfer process is certainly an issue worth exploring.

In fact, a clear understanding of audience is essential if a T² center is to be able to match available technology with local user needs. North Carolina's T² center, like most others, maintains a data base of all workshop participants consisting of their names, titles, organizations, addresses, and population groups. The data obtained from annual evaluations of its local audience can be an invaluable tool for any center that undertakes more extensive analyses of its target audience. For example, for the period January through October 1990, North Carolina's T² center, on the basis of information obtained from its data base of workshop participants, found that 52 percent of all workshop attendees came from rural areas (population below 50,000), whereas 48 percent came from urban areas (population of 50,000 and above). Of all rural participants, 61 percent came from communities with populations between 10,000 and 50,000. These figures alone indicate that at present the center's local users are from medium-sized communities and larger. As a result, as it plans for its 1991 training schedule, the center may need to take a serious look at how to reach smaller rural areas that are in need of its services but either unaware that the center exists or unable to travel to the workshops.

The Bay State Roads Program at the University of Massachusetts conducted a more comprehensive analysis of its target audience and presented the results at the 1990 National RTAP Conference (*7*). Their evaluation consisted of data obtained from the following categories:

—Percentage of towns stratified by population,
—Percentage workshop attendance for each population group,
—Workshop participation by location of community,
—Workshop participation by type of personnel,
—Percentage of towns in population group borrowing videotapes,
—Video library use by location of community,
—Roadshow participation by size of community,
—Roadshow participation by location of community,
—Roadshow participation by type of personnel,
—Requests for information by size of community, and
—Requests for information by location of community.

With a well-maintained data base, audience-related information like this may be fairly easy to obtain, though the process is time-consuming. The overall benefit of possessing such information is clearly evident. When precisely who our audience is is known, how to communicate to them in a way that caters to their specific needs, expectations, and beliefs becomes possible. Consequently, relationships are built that foster opportunities for technological change to occur.

• Question 2: Do you feel this course requires follow-up assistance or additional short courses to help you make practical use of the information presented?

Of 623 participants, 418 (67 percent) answered "Yes," follow-up assistance should be provided, while 205 (33 percent) responded "No." According to these figures, at least one-third of our training courses can be considered "stand alone" technology transfer efforts. In other words, participants may come to the training session, obtain the information and materials needed, take them home, and use them, as is, without significant post-training assistance. Although this fact does not necessarily ensure implementation of a new technology, it does imply that the packaging of the technology for local use has been successful. The remaining two-thirds of the workshops, however, do require follow-up assistance of some form to help users make the most effective use of the technological information and materials presented. Of those participants who said "Yes" on the course evaluation forms, the following types of follow-up assistance were suggested for the workshops in question:

—Refresher courses every 12 to 24 months to provide updates on changes in the information and materials presented,
—Additional short courses focusing in more detail on specific topics presented in workshop, and
—Problem-solving or hands-on demonstrations to make information "more realistic and memorable."

This information is tremendously valuable to the center's program. In the past, a single workshop, once developed, was conducted over and over again until attendance levels dropped, indicating a general lack of interest or need. But what the responses imply is the need to begin offering, where appropriate, several levels of courses for such topics as "Geographic Information Systems for Transportation (GIS–T)" and "Site Impact Traffic Evaluation (SITE)" to help local users gradually develop their expertise of a new technology before they begin to investigate ways to advance its implementation in their work community. Furthermore, by offering several levels, or modes (i.e., refresher, short course, hands-on demo, or advanced level), of a specific course topic, the target audience can be pinpointed so that each course is filled with individuals with similar backgrounds and levels of experience. Courses made up of participants with backgrounds too diverse are usually doomed to failure regardless of the value of the technological information presented.

• Question 3: Do you believe that the information received through this course will enable your organization to reduce costs in operations?

Four hundred eighteen (67 percent) participants believed that the information obtained through the workshops would allow them to reduce costs in operations, although none provided any ideas as to how much those savings might be. Where comments were provided, participants believed the savings related more to time and efficiency of operation than money. For example, one participant remarked that the SITE workshop would "save time by improving efficiency of analysis." For the communication workshop titled "Getting Your Message Understood: Communicating with Decision Makers, Citizens, and the Media," one participant remarked that "the cost analysis would be publicity savings (cutting out bad public relations)."

One hundred twenty-seven (20 percent) participants said that they did not believe the information they received would reduce operations costs. In fact, many felt that the course information and materials, if implemented, would require them to spend more money. For example, one participant attending the "Work Zone Safety" workshop said that he would have to spend more money to get the equipment he needed to construct safer work zones, although in the long run, he would probably save on liability costs. The following comment came from a participant of the GIS–T workshop: "My experience has been that GIS does not save costs. What it does is create new products and allow us to provide better service and more information for analysis, but it often requires more time and money." Seventy-nine participants (13 percent) were unsure of the likelihood of cost savings or provided no response.

The responses to this question suggest that T^2 centers are perhaps, indirectly but in many cases, asking local users to spend money (and lots of it) in order to implement new technology. If this is the case, then centers need to become more aware of the initial and long-term costs locals must face if they are to adopt a new technology. Centers must also ask themselves, "How can such information be communicated to locals in a way that would stimulate rather than inhibit the technology transfer process?" There is no question that money is a crucial barrier to technological change for most rural local agencies. But to provide training in new technology without any discussion of how to finance its implementation is like asking a driver to operate a motor vehicle without any fuel. The desire may be strong, but without adequate resources, the task impossible.

By revising its standard course evaluation form, North Carolina's T^2 center now directs locals to comment on the applicability of the new technology presented at its workshops. Thus, the center is able to determine more precisely whether or not it is creating a climate conducive to technological change through its training efforts. On the basis of the responses provided, the center discovered that it is basically introducing locals to the information and materials they need to solve current problems; however, the center also discovered that certain conditions should exist before the new technology may be applied:

—Local roads managers and decision makers must offer their support and express a willingness to adopt technological change.
—The T^2 center must provide follow-up training assistance as needed in the form of refresher courses, short courses, advanced-level courses, and hands-on demonstrations to cater to individual needs and levels of experience.
—Strategies for financing technological change must be explored and presented at workshops to help locals evaluate the resources available to them for implementing a new technology.

With this information in hand, North Carolina's T^2 center is better prepared to strengthen its position as a catalyst of technological change among rural, local communities.

The next step in a T^2 center's follow-up strategy should be to move beyond the level of presenting new technology in a climate conducive to change to a higher level of monitoring its successful implementation. T^2 centers cannot afford to

overlook this important responsibility of making sure that locals implement new technology cost effectively to meet their needs. Too often T^2 centers get stuck in a rut—churning out one training session after another, placing more value in the number of workshops conducted and individuals attending than in the overall rate of adopted technology. The scenario of the workshop participant who takes home a notebook full of good ideas only to let it collect dust on a shelf is all too often the actuality. Centers need to bluntly ask themselves, "How are locals using the information we give them?"

MONITORING LOCAL EFFORTS TO IMPLEMENT NEW TECHNOLOGY

Since it was created 4 years ago, North Carolina's T^2 center has not had the personnel or resources necessary to actively engage in any effort to monitor locals' use of the technology presented through its workshops. Like most newly established centers, its efforts were directed toward creating and maintaining a mailing list and packaging available technology for local use. However, for the 1991 training schedule, the center plans to achieve this new objective by distributing post-training evaluation cards approximately 3 months following each workshop. Of 46 T^2 centers in the country, 11 have already made use of this method of follow-up evaluation, although each may rely on these response cards for different purposes.

North Carolina's T^2 center plans to use these cards to determine how past workshop attendees used the information they received to improve their method of operation. The follow-up response card would include the following five questions with space provided for additional comments:

1. Did the workshop provide you with the information/materials you needed? If no, please explain: YES NO

2. Have you made changes for the better in your method of operation as a result of this workshop? Please explain: (If you answered no, please go on to question 4) YES NO

3. (a) Were the costs associated with implementing these changes extensive? Please explain: YES NO

   (b) What would you estimate to be the costs related to implementing these changes?

4. What prevented you from making use of the information/materials presented through this workshop?

5. How can we improve this workshop for your benefit?

Because the information to be obtained from these cards is so important, the T^2 center can do certain things to improve the response rate. Follow-up response cards should be brief (3 to 5 questions is usually sufficient); they should be mailed directly to the workshop participant (not his department or supervisor) and should, if possible, be produced on a detachable, self-addressed, postage-paid card. The easier the task, the more likely a response.

Aside from follow-up response cards, the center may rely on additional strategies for monitoring locals' use of new technology. Centers can keep the channels of communication open by offering locals an 800 number for calling in questions, problems, success stories, etc., related to their attempts to implement new technology. Locals can be encouraged at the workshops to use this number to keep in touch with the center and let them know how they were able to make use of the information presented at the workshops once they returned to their work environment. Furthermore, the center may conduct its own phone surveys, in addition to written program evaluation forms, to spot-check locals' progress with implementing new technology. These surveys may be done on a quarterly or annual basis.

Whatever strategy, or strategies, a center chooses to use, it should be sure to make contact directly and regularly with the locals who have attended the workshops or requested technical assistance in some other way. In other words, the center should rely consistently on feedback obtained firsthand from its local users—in addition to the suggestions and recommendations put forth by secondary sources like advisory committees, which are isolated bodies that are integral to but not directly involved in the technology transfer process. Only then can the T^2 center witness the true results of its technology transfer efforts.

PROMOTING LOCAL SUCCESS STORIES

T^2 centers have always been encouraged to share their own success stories with other centers concerning innovative training ideas. The Washington, D.C.–based T^2 Clearinghouse and the annual National RTAP Conference foster networking between the centers so that they may improve program efficiency and training methods.

Likewise, the T^2 center should foster networking among the agencies it serves by promoting local success stories in its newsletter. Two advantages result. Locals benefit from the opportunity to interact not only with the T^2 center but with other local agencies that may have transportation needs similar to their own. The T^2 center benefits from the opportunity to document local efforts to implement new technology. A side benefit is that the T^2 center, through its promotion of local success stories, continually nurtures an environment conducive to technological change and strengthens its role as a partner to local agencies in the technology transfer process.

SUMMARY

The responsibilities that the T^2 center must bear if it is to function truly as an agent of technological change and innovation have been examined. North Carolina's T^2 center is beginning to investigate how well it is communicating technological change to local groups. The center's experiences with this task have been presented for review, and suggestions

have been offered to other centers on the basis of its findings so far.

In summary, the following points have been made:

- T^2 centers are faced with three main responsibilities with respect to transferring technology to local agencies: (a) identifying the transportation needs of local officials, (b) packaging the appropriate technology for meeting those needs so that it may be easily understood and implemented, and (c) following up on locals' use of new technology to make sure its implementation is successful (i.e., solves a problem or satisfies a need).
- Although most T^2 centers have learned to accomplish the first two responsibilities effectively, they still need to develop strategies to accomplish the third.
- T^2 centers must learn how locals are using technology presented at workshops and demonstrations if they are to understand fully the success of their technology transfer efforts. This strategy may consist of the following three tasks: (a) creating a climate conducive to technological change; (b) monitoring local attempts to implement new technology; and (c) promoting "local success stories" concerning technological change.
- North Carolina's T^2 center found that revising its course evaluation form enabled it to accomplish the first task and subsequently identify factors that contribute toward establishing a climate more conducive to change, such as support from local roads managers, availability of follow-up training courses, and strategies for funding technological innovation. To accomplish the second task, the center plans to conduct follow-up surveys 3 months after each workshop to determine how locals utilized the technology to which they were introduced once they returned to their work environment. To accomplish the third task, the center's newsletter offers the best opportunity to promote local success stories and foster networking among local agencies which share similar needs.

T^2 centers must regularly communicate with local officials at all stages of the technology transfer process—and this especially includes following up on locals' use of the information and materials presented to them by the T^2 center. Traditionally, North Carolina's T^2 center, like others, has spent its time in the following manner: planning (20 percent); conducting training (70 percent); and follow-up evaluation activities (10 percent). However, if technology transfer is to be successfully carried out at the local level, the following division of time might be more appropriate: planning (20 percent); conducting training (50 percent); and follow-up evaluation activities (30 percent). More effort needs to be devoted to developing program evaluation strategies that allow the center to bear witness to technological change and the benefits emerging from it. Without this knowledge, the T^2 center will remain ignorant of its true contribution to technological change among local agencies.

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