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Role of Outreach Activities in Transportation Education

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In order to respond to the educational needs of transportation professionals, transportation operators, and the general public, an outreach program has been established within the University of Wisconsin system. The program, operated by the university's Office of Statewide Transportation Programs (OSTP), brings the expertise of the university to the community to aid in the solution of pressing transportation problems. The program is modeled after the county agricultural extension service, the agents of which form a bridge between the university and the agricultural industry. Two major aspects of the program involve (a) formal short courses, seminars, conferences, and workshops and (b) informal one-to-one assistance. Experience since the establishment of OSTP in 1976 has shown that universities that have a transportation faculty can fulfill an important educational function that is not covered by traditional course offerings and degree programs.

Traditionally, educational programs offered within universities at undergraduate and graduate levels have been aimed at preparing individuals for their chosen careers. These programs follow well-defined curricula and meet professional personnel needs in many fields. Recently, however, there has been an increasing awareness of the need to develop innovative programs that reach practitioners and members of the community directly. Such programs occur outside the classroom and include the concept of continuing education as well as technical and community-assistance programs that involve a broad spectrum of activities.

One means by which such programs can develop is through an approach patterned after the county agricultural extension service, the agents of which provide assistance and advice to farmers in growing their crops and raising livestock. The agricultural extension service involves one-to-one assistance by bringing together technical expertise from a university and persons in agricultural industries who are facing day-to-day problems. This paper will describe how such an effort is developing in the University of Wisconsin system under the auspices of the Office of Statewide Transportation Programs (OSTP) of the University of Wisconsin--Extension.

OSTP is in the Division of Urban Outreach, a unique entity in the University of Wisconsin system because it is part of both the University of Wisconsin--Extension and the University of Wisconsin--Milwaukee. OSTP works closely with faculty and staff from the University of Wisconsin--Milwaukee, chiefly through its Center for Urban Transportation Studies, and with other units of the University of Wisconsin system in order to provide a program in transportation that is widely available to the community.

The program attempts to create an environment in which open communication among participants can occur. The purpose of these efforts is not simply to educate but also to achieve a better understanding of the issues at hand. This in turn leads to decision making that is more effective and more in the public interest. OSTP'S transportation education

program consists of two basic components: an educational component carried out through conferences, workshops, and short courses that address topical issues in transportation and a community-assistance component that takes many forms and involves both formal and informal activities.

During its first year of operation, OSTP had a budget of \$80 000 and a requirement to generate an income of \$8000. OSTP now has a staff of four--a director, a conference coordinator, a community-assistance coordinator, and a secretary. The overall budget is now \$110 000 and the income requirement is \$27 000. This income requirement is satisfied primarily through registration fees charged to conference attendees. In this paper, the activities of OSTP and the overall philosophy of the program will be discussed.

PHILOSOPHY OF THE PROGRAM

OSTP was established in September 1976 by the Division of Urban Outreach of the University of Wisconsin--Milwaukee and the University of Wisconsin--Extension to respond to increased educational needs in transportation within the Milwaukee metropolitan area and the state of Wisconsin. The philosophy of OSTP is based on the premise that the resources of the university can be applied to community needs in transportation in a variety of ways. This philosophy recognizes the importance of community input; without it, many needs would not be addressed.

The philosophy of the outreach program consists of the following six basic principles and beliefs:

1. There is a fundamental relationship between the university and the community of which it is a part. Communities benefit from increased educational opportunities and from the application of knowledge obtained through the university. The university benefits because its faculty and staff gain practical experience that is reflected in future outreach activities and traditional educational offerings. Thus the community represents a dynamic laboratory that provides important input to the educational function through, for example, timely case studies from local settings. As a consequence, students who take part in this process are exposed to real-world transportation-related issues within the community.

2. Transfer of information, research, and education can best occur when there is close communication between those who are faced with problems and those who have the capability to lend assistance in solving them. The closer the university can be linked to the community, the higher the probability is that the education and research done at the university will be relevant and useful to the community. Close communication between university and

community throughout the educational and research process is required to maintain a capability of providing effective and efficient programs.

3. Historically, the university has been viewed as a leader in education and in the creation of new knowledge. If the university is to remain at the cutting edge of relevant applied studies and thus meet the demands of a complex society, it must reach out into the community and play an active role in defining problems, in providing objective information for policy formulation, and in offering diverse innovative educational activities. This process attempts to respond to community needs as they arise as well as to anticipate needs before they arise.

4. Transportation outreach programs must be able to respond to current needs on a real-time basis. That is, the demand for information by practitioners and others is often immediate; situations occur in which the practitioner requires specialized knowledge quickly. Because the areas of interest involved are often new, this specialized knowledge is not typically available in journals, books, traditional course offerings, or degree programs within the university. Outreach programs can fill this informational void through quick response and tailor-made programs that directly meet the needs of practitioners.

5. As is well known, some of the issues that arise in transportation are highly controversial, and dialogue between opposing forces may be confined to formal processes such as public hearings. In such cases, resolution of an impasse can be facilitated if opposing groups have a better understanding of each other's position and the reasons for those positions. In these situations the university, unlike participating agencies, can provide a neutral environment within which effective focused dialogue can take place.

6. The lifeblood of a transportation outreach program involves recognition of the community as the most important resource. Problem definition, issue identification, and program planning and development are necessary in order to enhance the benefits of the outreach program.

The philosophy of outreach program development, whether conference planning or assistance, demands a collaborative approach, that is, an approach in which there is a genuine interchange between program planners and community representatives throughout the entire program-planning process. The approach entails far more than attempting to sell a prepared program or seeking the blessing of key people. OSTP can be compared to a counselor whose job is to assist the community in discovering and achieving its objectives.

GOALS AND CRITERIA

In keeping with this philosophy, the following goals of the outreach programs in transportation have been developed. These have been formulated with the intent of making optimal use of university and community resources while providing clients with products that are useful. The goals are as follows:

1. To focus the considerable talent of the university institutions on transportation problems and to make this expertise available to agencies and groups within the region,
2. To offer technically sound professional-quality applied research and educational programming that responds to demonstrated transportation needs,
3. To identify transportation-assistance needs throughout the areas served by the university, and
4. To provide both professionals and citizens

with up-to-date information on important topics such as transit, goods movement, and transportation energy conservation through applied research, educational programs, and direct-assistance activities.

In order to carry out these goals, criteria have been established for the development and selection of individual projects. These criteria ensure that the programs offered by the university relate directly to user needs and that they are offered in a constructive and responsible manner. The criteria for project selection are as follows:

1. Can the project results be transferred to other areas of the community and the state?
2. Does the project lead to improvement of knowledge and to more expertise in the local area?
3. Does the project lead to specific improvements within the community?
4. Does the project deal with an area of critical need?
5. Would the agency or group that has the need have much likelihood of otherwise obtaining the resources to deal with the problem?
6. Does the project lead to improved expertise of university faculty?
7. Is there a clear understanding of who the potential users are and have they been given the opportunity to contribute to the problem-definition phase of the project?

Although few potential projects rank high on all criteria, projects that are seriously deficient in one or more areas have little chance of being undertaken.

PROGRAM COMPONENTS

The primary objective of OSTP is to reach out and to serve the community through expanded transportation education. The overall outreach program designed to satisfy this objective has two components--a formal conference component and a community-assistance component.

Conference Component

Within the conference component, OSTP plans, develops, and administers noncredit courses, institutes, and workshops in transportation. These educational activities typically address one issue-oriented topic. The programs bring together the latest knowledge on emerging issues, and participants are encouraged to propose solutions. Participants come from Wisconsin and throughout the United States and include professionals from a wide range of disciplines, concerned citizens, and university students. Examples of conferences and short courses offered from 1978 to 1980 are shown below:

- Coordination of Urban Transit Services, Oct. 16-17, 1980, Milwaukee
- Essentials in a Specialized Transit Driver Program, Oct. 6-8, 1980, Madison
- Practical Considerations in Rural Transit, Aug. 18-20, 1980, Stevens Point
- Quick Response Methods for Urban Transportation Decision Making, July 28-30, 1980, Milwaukee
- Midwest Rail III: Restructuring for the 1980s, June 16-17, 1980, Madison
- Risk Management and Insurance Issues Facing New Transportation Programs (Problems and Solutions), May 12-13, 1980, Milwaukee
- Seminar on Traffic Engineering in Small Communities, April 24, 1980, Beaver Dam

External Transportation in Milwaukee's Future, Nov. 2, 1979, Milwaukee
 Freight Movement In and Through Urban Areas, Oct. 8-9, 1979, Milwaukee
 Recent Developments in Rural Transit, Aug. 6-8, 1979, Stevens Point
 Midwest Rail II: Light Density Lines, June 25-26, 1979, Madison
 Basic Rail Planning, Nov. 16-17, 1978, Milwaukee
 Coordination of Urban Transit Services, Sept. 14-15, 1978, Milwaukee
 Operation of Rural Transit Systems, Aug. 10-11, 1978, Stevens Point
 Midwestern Rail: Problems and Alternatives, June 26-27, 1978, Madison
 Transit Personnel Relations, May 18-19, 1978, Milwaukee
 Community Participation in the Transportation Planning Process, April 13-14, 1978, Milwaukee

OSTP maintains an internal planning committee that consists of university faculty and staff. Each member of this committee has an area of transportation specialization. The function of this committee is twofold. First, since members are in touch with recent transportation developments in the community and elsewhere, they suggest possible topics for conferences and short courses. Second, the committee identifies resource persons who may be helpful in planning or participating in a future conference.

A conference may involve active participation of practitioners and officials from the community and elsewhere. In the past, OSTP has had transportation coordinators of local agencies serve on panel discussions; staff members of the Wisconsin Department of Transportation speak on state transportation legislation and plans; federal agency personnel speak on federal regulations and legislative initiatives; railroad management, labor, and shippers speak on problems that face the railroad industry; and representatives of taxi companies and school-bus associations address the potential role of private transportation service for special groups. Major conferences have been held in Milwaukee, Madison, and Stevens Point. In addition, university faculty have recently offered a series of 3-h seminars on rail planning and on transportation for the elderly and disabled throughout the state.

In summary, the conference component of the outreach program takes an interdisciplinary approach and is designed to ensure that public decisions will reflect the values, needs, and priorities of those affected by such decisions. In this case the university, as neutral ground, conducts a program that involves diversified opinion and current facts that can lead to resolution of critical problems.

Community Assistance

The second program component is transportation assistance to communities and agencies in which the university provides a vital link between a transportation need and the educational and research resources that can satisfy that need. In the spirit of outreach, OSTP provides the assistance for self-help in definition of the community problem and in preparation of alternative courses of action. For a governmental agency, this program component leads to increased utilization of available transportation expertise in resolving problems. In the spirit of cooperation, this relationship among the university, the community, and the governmental agency promotes high-quality, more-useful transportation service.

Community assistance means working with individuals from various agencies to help identify and solve transportation problems. Ideally, this is an

ongoing process by which problems are either addressed as they arise or anticipated in advance. An appropriate strategy is then worked out between university and agency personnel.

The community-assistance component may take one of two general forms. The first form is assistance to a single agency through one-to-one consultations, periodic seminars, program evaluation, research, or preparation of educational materials such as slide programs and training manuals. The second form of direct assistance consists of seminars or meetings that are organized locally by using a maximum amount of community input. Persons or agencies can thereby seek solutions to transportation problems through interaction with others in similar circumstances. The involvement of the university enhances cooperation and provides a legitimacy to the complete process.

Case Studies

In this section, four case studies are examined. They have been selected to demonstrate how the two basic components of transportation outreach programs function.

Traffic Engineering: New Richmond, Wisconsin (1976-1978)

New Richmond, a rural city of approximately 4200, was experiencing several problems regarding traffic flow. In December 1976, the mayor asked OSTP to assist in alleviating some of these traffic problems. Working with a University of Wisconsin--Extension community resource development agent, city representatives, and representatives of other public agencies in the area, OSTP established two committees. One was a seven-member citizen transportation committee and the other was a companion technical advisory committee.

The technical advisory committee consisted of seven members that included representatives from the Wisconsin Department of Transportation, West Central Wisconsin Regional Planning Commission, the County Planning Office, and the University of Wisconsin--Extension. The committees were the catalyst for actions taken by the city to improve traffic circulation.

The New Richmond experience provided guidelines for establishing transportation outreach programs in small rural communities:

1. Even though there is a public agency in a rural area that has the responsibility for transportation planning assistance, the assistance may not flow until some social interaction between agency personnel and the community establishes rapport and the agency becomes familiar with community problems.

2. When transportation committees are formed in rural towns or counties, the committees must be sanctioned by public governing bodies. Otherwise, much planning can be done but there will be little or no implementation.

3. Transportation affects a wide range of economic and social activities. Consequently, committees that are established to deal with transportation problems should have representation from many sources. Broad-based input and support further improve the chances that plans will be carried out.

Since the New Richmond experience, OSTP and University of Wisconsin--Extension community resource development agents have provided assistance to three other rural communities in Wisconsin.

Railroad Planning Conferences (1976-1980)

OSTP established a continuing-education workshop entitled Basic Rail Planning. It has been offered once every year for the last four years. These workshops have trained Wisconsin residents and residents of 31 other states. A total of 162 persons have attended these workshops; those who found themselves in a rail-planning role and were not familiar with the jargon, law, and procedures of rail planning benefited the most.

OSTP also sponsored an informational series entitled Midwest Rail. All these conferences are taped, and complementary tapes are furnished to the Federal Railroad Administration, Wisconsin Department of Transportation, and the library of the University of Wisconsin--Extension. During the last three years, 246 residents of Wisconsin and residents of 25 other states have attended these conferences. Some of the lessons learned from sponsoring rail programs include the following:

1. Federal and state rail transportation agencies appreciate rail programs, especially when they have the opportunity to develop conference structure, select speakers, and send their own personnel to be trained.
2. Because the railroad industry is changing dramatically, periodic educational sessions are essential for maintaining pace in the field.
3. Programs can be an effective means of helping individuals deal with immediate problems. For example, about four years ago railroad abandonments were vigorously fought, especially by community resource development agents. Evaluation procedures derived from training and information update sessions provided procedures for judging abandonments in a more-equitable manner.

Human-Service Transportation (1976-1980)

An important benefit of collaboration when conferences are sponsored or assistance is provided is that, when information flows freely, learning occurs for all persons involved. For instance, the information learned from sponsoring 10 conferences and workshops on human-service transportation enabled OSTP to provide one-to-one assistance in the areas of plan coordination, equipment selection, operations, monitoring, evaluation, and record keeping.

An outreach function in a university is also a valuable resource for state agencies. Generally, state agencies do not participate in formal public education. During the period between April and November 1978, OSTP conducted five one-day workshops throughout the state in a joint effort with the Wisconsin Departments of Health and Social Services and of Transportation. These workshops, entitled Specialized Transportation, Our Common Denominator, were used to introduce the concept of coordination and to explain preliminary guidelines that were developed for administration of the program under Section 18 of the Urban Mass Transportation Act of 1964, as amended.

In addition to the benefit of learning in a collaborative process, an intrinsic development of trust and confidence is also built when efforts are sincere and meaningful. These educational programs for human-service transportation provided further direction for outreach efforts:

1. Although the level of sophistication among transportation administrators has greatly increased during the last four years, continuing assistance is necessary because of new personnel, new programs,

changes in laws and regulations, and the need for coordination.

2. Transportation service is finally becoming recognized as a large expenditure in agency budgets. Giving it the attention it deserves requires a higher level of expertise in operations and administration and thus a greater emphasis on continuing education.

Milwaukee County Institutions Grounds (1979-1980)

An example of interaction between outreach programs and traditional university education is provided by recent assistance to the Milwaukee County Institutions Grounds (MCIG). MCIG is the location of major public medical facilities for the Milwaukee metropolitan area. Despite its suburban location, MCIG experienced severe shortages of parking for its 16 000 employees, patients, and visitors. OSTP was asked to investigate ways to reduce demand for the limited parking facilities. It was apparent that considerable background information would need to be developed, so the Center for Urban Transportation Studies (CUTS) of the University of Wisconsin--Milwaukee was asked to participate. Three graduate students at CUTS, sponsored by OSTP, conducted a classical transportation planning study that included a travel survey of all MCIG employees.

MCIG staff gained confidence in the students' work and suggested that a follow-up study look at the transportation problems of patients and visitors. This second MCIG study was adopted as a class project for a graduate course in transportation planning. MCIG staff worked closely with the students in broadening the earlier study. A spin-off of the second MCIG study was a research paper that documented an innovative technique for measuring the physical accessibility of medical care to transit-dependent groups of patients. Results of the MCIG experience include the following:

1. Graduate students can be effective in outreach activities, particularly if they are given guidance from faculty and sufficient time to explore important issues.
2. Participation in outreach activities provides a learning experience that is a valuable supplement to traditional university offerings.
3. Transportation problems observed during outreach efforts can provide direction to applied research for university faculty.

CONCLUSION

Since the inception of OSTP, considerable experience has been gained in outreach activities related to transportation. Through this process several general lessons have been learned. They are presented here so that others may benefit from this practical experience:

1. Transportation outreach is an important activity for a university. There is a need for the university to act as a neutral party to bring people together to discuss crucial issues that affect the community.
2. Community input to program planning is a continuous process that is often difficult to formalize. Although committee structure has been used, most input is derived through intermittent contact with key individuals at the local level.
3. Community outreach allows locally based agencies to acquire technical assistance that they would otherwise have to do without, since restricted budgets preclude the use of professional consultants.
4. Outreach programs enhance the curriculum

within the university. Courses in transportation can often benefit from the use of case studies obtained from community-assistance activities, and students in these courses are encouraged to attend formal conferences.

5. Involvement in an outreach program enables faculty to keep up with current activities in a topical area of transportation as well as with community problems and issues.

6. It is important to remain open-minded and flexible when programs are planned, developed, and implemented. This is particularly true with respect to community assistance. One should recognize that

community assistance is most effective when it is viewed as a learning experience for all parties involved. The attitude that "we're here to solve your problems" is rarely effective.

7. Finally, it has been learned that transportation outreach programs can be highly beneficial to both the community and the university. The community can benefit from greater access to professional expertise to assist in solving their problems. The university can benefit through a better understanding of problems faced in the world outside the university, which enables them to aim their activities in a more-relevant direction.

Transportation Engineering and the University: Past, Present, and Future Challenges

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Some of the major challenges faced by universities in developing transportation programs are discussed and the history of one program's response to these challenges is traced. Current challenges, such as the increasing number of foreign students in transportation programs, the shifting emphasis in management aspects, and the inclusion of women in technical programs, are also discussed as well as problems that are now waiting on the horizon, such as declining graduate enrollments.

In 1956, the federal government authorized the largest single public works project in the history of mankind--the construction of the 41 000-mile national system of Interstate and defense highways. With it was introduced a variety of federal road-user taxes to be placed in the Highway Trust Fund, created to finance part of the cost of the system; the federal government was to provide 90 percent of the total cost.

The system had been contemplated since the mid-1940s and strongly supported by the trucking industry, but it took more than a decade to become a reality, primarily due to two major issues: (a) how to pay for the system and (b) whether the system should be built into urban areas or around them as bypass or circumferential highways. The latter proved to be the thornier issue, which was eventually resolved in favor of building into cities, a decision that had drastic impacts on suburban development and, in some cases, urban deterioration.

The impact of the 1956 action was to take federal highway disbursements, which had totaled about \$7 billion in the 35 years between 1921 and 1956, and immediately increase them to \$4 billion per year and later to more than \$6 billion per year.

In 1962, the federal government introduced the requirement for ongoing comprehensive transportation planning for all urbanized areas (cities that had a population of 50 000 or more), thus giving rise to myriad metropolitan planning organizations (MPOs) and to the institutionalization of regional transportation planning. In 1964, the first Urban Mass Transportation Assistance Act was the federal government's formal recognition that highways were not the only mode of transportation and this provided the impetus for renewed interest in public transportation planning and development.

By 1968, some of the disbenefits of massive highway construction were now evident, and some legal brakes were applied, for example, the capping of the Interstate system at 42 500 miles and the requirement that two public hearings be held before a project was undertaken. Federal funding for arterial and street improvements through the Traffic Operations Program for Increasing Capacity and Safety (TOPICS) also began. In 1970, the Environmental Protection Act further retarded highway construction in urban areas and required the explicit consideration of environmental impacts in the planning and design process.

This brief history is merely background. In the 14 years between 1956 and 1970, the professional discipline of transportation planning and engineering was born and developed into the specialty now practiced. That is not to say that the decade of the 1970s did not also greatly influence the profession but to recognize that, before the 1970s, there was no generally recognized discipline and, most important, there were few systematic approaches to the emerging field in the universities.

INITIAL CHALLENGE

Highway engineering (i.e., highway construction and physical design) has long been an integral part of most civil engineering programs. Such courses have existed at the Polytechnic Institute of New York since the early 1940s. By the early to middle 1950s, programs that had a strong highway curriculum began to introduce traffic engineering (i.e., functional design and traffic control) as a distinct subject specialty. By the early 1960s, several universities (including Polytechnic) had established strong programs in the two key areas of highway and traffic engineering.

Comprehensive regional transportation planning entered the scene in the late 1950s by means of the Chicago Area Transportation Study (CATS), which became the model for many such studies. Such planning became critical in 1962 when the federal government mandated ongoing comprehensive transportation planning.

The university faced a number of major problems