**POOL FUND TPF-5(333)**

**TRANSPORTATION LEARNING NETWORK**

**A POOLED FUND STUDY**

Upper Great Plains Transportation Institute

North Dakota State University

for the

North Dakota Department of Transportation

**Final Report**

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BACKGROUND

The Tel8 Pooled Fund Study was created in 1994 to support the development of a telecommunications system dedicated to improving and enhancing transportation in the Federal Highway Administration (FHWA) Region 8. The TEL8 established a partnership among the region’s Departments of Transportation (DOT) and Mountain Plains Consortium (MPC) transportation research universities.

The TEL8 established a network control center at North Dakota State University (NDSU) to manage the administrative, technical and programming functions of the program. It included video conference facilities at each of the original sites and a satellite-based transmission medium connecting the network. In the late 1990’s, Tel8 undertook a major reconfiguration of its videoconference and network technology when the entire system was switched from a satellite-based transmission medium to a T1 private network. At the time, an analysis of the potential transmission mediums indicated that TEL8 would benefit from purchasing and operating its own videoconference bridge. A bridge was installed at NDSU, the Network Control Center.

In 2005, TEL8 was renamed the Transportation Learning Network (TLN). The video conferencing technology continued with an internet protocol and closed network of T1 lines adding a content server for recording.

A Learning Management System (LMS) was purchased in 2008, customized in 2009 and into production in 2010. Robust technical training was enhanced with professional development programming to meet the changing needs of member organizations. Extensive on-demand training modules were also developed and hosted on the LMS.

TLN MISSION AND VISION

The Transportation Learning Network is a division of the Upper Great Plains Transportation Institute (UGPTI) at North Dakota State University. It TLN was developed to serve the transportation interests of the region and complements the efforts of its various members. It provides access to information and expertise not readily available to transportation professionals in the region. TLN identifies, schedules, distributes and warehouses technology transfer for its members.

**Mission**

To support quality transportation through a network of people and technology that serves Transportation Learning Network members by enhancing communication, education, professional development, technology transfer, and research.

**Vision**

We envision the Transportation Learning Network as a national leader in providing access and programming for high quality expertise sharing among transportation professionals.

POOLED FUND STUDY DESCRIPTION

Due to the geographic nature and related travel costs of state DOT’s, and the cities and counties within these states, many technical topics and innovations would not be delivered or would be delivered to only a small percentage of the staff within these states. TLN is a critical tool in assuring technology transfer to state DOT’s, counties and cities, and that they stay abreast of the latest innovations, initiatives, and research which helps them be more efficient and cost-effective.

**Objectives**

TLN is dedicated to: 1) technology transfer, 2) innovative transportation practices, 3) new processes, initiatives and technology. Through the pooled fund, the member states research and deliver needed technology transfer topics via distance-based and on-demand methods.

**Scope of Work**

On an annual basis, the pooled fund members develop and identify new topics of technology transfer through coordination of state DOT’s and Local Technical Assistance Programs (LTAP). The process involves an annual assessment of each state’s need for new insights in the areas of construction, design, environmental, maintenance, materials, planning, pavement preservation, traffic and safety, and professional development. Additionally, the TLN pool aimed at delivering innovative insights into transportation infrastructure management through Every-Day-Counts initiatives. Each year, topics were proposed and prioritized by the member states and given to TLN for development. The latest advances in technical programming and innovations from other organizations are also evaluated for TLN delivery. These organizations include other DOT’s, universities, industry groups such as ATSSA, OSHA, AGC, USDA, AASHTO-TC3, National Center for Pavement Preservation, Dakota Asphalt Paving Association, and others. Technology exchange among states will be supported through multi-state roundtable discussions on topics relating to design, construction, maintenance, and materials. The state DOT’s annually prioritize the roundtable topics based on their current and emerging needs. The intent of the roundtable topics is to showcase the best practices, techniques and innovations of each state so awareness and implementation insights can be gained by other states.

TLN MEMBERS

The Transportation Learning Network (TLN) Pooled Fund Study (study # TPF-5(333) was renewed for a five-year period of 2015-2020 (fiscal year October 1 through September 30).

The following organizations were members of TLN:

* Montana Department of Transportation
* North Dakota Department of Transportation
* South Dakota Department of Transportation
* Wyoming Department of Transportation
* Mountain Plains Consortium
	+ Colorado State University
	+ North Dakota State University
	+ South Dakota State University
	+ University of Colorado Denver
	+ University of Denver
	+ University of Utah
	+ University of Wyoming
	+ Utah State University

STAFF

During this reporting period, the TLN staff were comprised of a Program Director, Associate Program Director, LMS Administrator and Project Coordinator, Helpdesk Coordinator, and NDLTAP Program Director. Subject matter Experts (SME) were under contract as needed.

FINANCES

Each Department of Transportation committed $117,000 annually. These funds covered staff salaries, SME fees, travel, IT services, communications and software. TLN operated on a total annual budget of $468,000.

PROGRAMMING/COORDINATORS COMMITTEE

Each of the participating DOT’s assign staff to form the TLN Programming/Coordinators Committee. This group met once a month to discuss content, scheduling, advertising, program delivery, and attendance.

PROGRAMMING AND TECHNOLOGY INFRASTRUCTURE

The TLN staff conducted an annual survey to seek input from the member DOTs on technology transfer topics most important to their states. These topics were categorized and subject matter experts were sought to deliver cutting-edge information.

Over the 5-year period there were 270 topics delivered for a total attendance of 17,289. In addition to live webinars and video conference sessions, the LMS hosts over 200 self-paced modules. The majority of the modules are provided by AASHTO TC3. These modules were upgraded to from a FLASH format to a HTML5 format.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Time Period** | **# of Webinars** | **# of Video Conferences** | **Total Attendance** | **# of Online Modules** | **Completions** |
| Oct. 2015-Sept. 2016 | 9 | 37 | 3,888 | 76 | 334 |
| Oct. 2016-Sept. 2017 | 18 | 38 | 3,250 | 95 | 283 |
| Oct. 2017-Sept. 2018 | 26 | 31 | 3,585 | 101 | 259 |
| Oct. 2018-Sept. 2019 | 37 | 26 | 2,529 | 163 | 568 |
| Oct. 2019-Sept. 2020 | 31 | 17 | 4,037 | 207 | 1,016 |
|  |  |  |  |   |  |
|  | 121 | 149 | 17,289 | 642 | 2,460 |

The DOTs operated and supported a video conference network connecting over 40 individual sites, while NDSU hosted the video conference bridge which provided system connectivity. Cascading two or more bridges connected together increased the availability for participants.

In March of 2020 the last video conference session was held due to COVID-19. TLN moved to delivering with a webinar format, most specifically Zoom. To address immediate concerns, TLN offered timely topics such as:

* Working from Home
* Managing Teleworking Employees
* Ethics is for Everyone
* Principles of Contract Negotiation
* Understanding & Interpreting Construction Contracting
* Determining a Contractor’s Entitlement to a Time Extension Due to COVID-19
* Work Zone Training Plan

**Learning Management System**

The learning management system provides capabilities for a calendar of events, registration, online modules, learning and achievement plans. The majority of sessions were recorded and maintained on the LMS for later viewing. In 2020, the LMS was upgraded with a new look to enhance the user’s experience.

In addition to users accessing information from the LMS, TLN maintains a webpage hosted on the NDSU-UGPTI site.

SUMMARY

TLN is a network of networks. It is through the cooperation and assistance of partners that TLN can carry out its mission. With COVID-19, video conference sites were shutdown. Moving to a webinar format was very welcomed. Participation increased in both live sessions and self-paced modules. TLN will continue to build upon this model in the future.